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Final Report

VISUAL AID CLINIC

Department of Ophthalmology
Washington University School of Medicine
St. Louis, Missouri

Demonstration Project Grant RD-226

April 1, 1958 - March 30, 1962

Office of Vocational Rehabilitation
Department of Health, Education and Welfare

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I. INTRODUCTION

1. Establishment of the facility

The Visual Aids Clinic in the Department of Ophthalmology, Washington University School of Medicine, was established January 1, 1958, under Project Grant RD-226* of the Department of Health, Education and Welfare, Office of Vocational Rehabilitation. The three-year grant period was extended for a fourth year, the grant period terminating December 31, 1962. Since that time the Visual Aids Clinic has been maintained as a permanent facility within the Department of Ophthalmology of the Washington University School of Medicine.

2. Purposes

The Visual Aids Clinic was established for the purpose of maintaining a center for examination of patients having subnormal vision and for the prescribing of optical and non-optical aids for these patients. This clinic set out multiple goals, some of which were achieved in varying degrees, others of which were altered as experience accumulated in the functioning of the clinic and its areas of greatest usefulness. The goals set for the Visual Aids Clinic included:

*Project Grant RD-226 application was originally made by Dr. Philip Shaham of the Department of Ophthalmology, Washington University School of Medicine. The original program and goals of the project were the creation of Dr. Shaham, whose temporary illness prevented him from implementing the project. The project director and all personnel involved in the Visual Aids Clinic are indebted to Dr. Shaham for his clearly delineated program and his assistance.

(1) Evaluation of the use of optical aids in vocational rehabilitation of the near-blind. This goal, the primary one in setting up the clinic, was relegated to a secondary role on the basis of early experiences with the project.

(2) Teaching of residents and fellows in Ophthalmology in the theory and practical use of optical aids for subnormal vision.

(3) Teaching of social workers in the problems of patient adjustment to the various types of optical aids.

(4) Evaluation of patient acceptance of optical aids and delineation of those factors which correlated with such acceptance, with the view of enabling the clinic staff to predict the success or failure of the optical aid in individual cases.

(5) Research relating to development of new types of optical aids.

Further early experiences, as the first year of the project was evaluated, called for a revision of our original goals. In a medical school environment, the teaching function of the clinic remained a primary and very rewarding consideration. However, the availability of a patient load consisting of a group of unusual and difficult refraction patients enabled us to extend our residency teaching concept. In addition to an exposure to the principles of optical aids, each resident gained experience in special refraction problems and lens corrections.

Two trends appeared early in the project, necessitating a re-evaluation of our project goals. One of these was the paucity of candidates for, and successes in, job rehabilitation - in the most literal sense - resulting from

the fitting of optical aids. The second trend was the indication of dramatic successes in children. Because the population sample included a much larger number of children than had been anticipated, and because the application of the principles learned in the visual aids clinic revealed that many of these children could be up-graded in the scope of their information-gathering media for visual learning, a broader re-appraisal of the concept of "rehabilitation" was found to be in order. It was deemed practical to expand our concept of "rehabilitation" since it was felt that the more we could broaden the scope of sighted education for a partially-sighted child, the greater would be the enhancement of his ability to compete in a sighted society and the greater would be his economic potential. Such enhancement would constitute rehabilitation at its most effective level, by applying it to the most adaptable age groups.

Other modifications of our original goals included:

- (1) An increased awareness of the community service aspect and the community responsibility which rests with the visual aids clinic, in the absence of similar facility within a radius of 200 miles from St. Louis.
- (2) Inclusion of contact lens services within the framework of the visual aids clinic where these devices showed any promise of aiding patients with subnormal vision.
- (3) An awareness of the responsibility of the visual aids clinic to educate patients, families, teachers, and the community in general regarding the role of optical aids in dispelling fallacies which have in the past

retarded the acceptance and use of these devices. This educational function was pursued in a number of ways, including talks to interested lay groups, lectures to teachers of the blind and partially-sighted, and conferences with school teachers. In addition, lectures were given for the University of Missouri as part of an extension course, and at Missouri and Illinois State conventions of educators. Publication of the activity of the Visual Aid Clinic in the Missouri State Medical Journal was also used as an educational device.

(4) An awareness of the need to educate patients, families and teachers in the techniques of the use of optical aids, and to provide support to these patients as they work with these aids.

The dynamic nature of any project such as this visual aids clinic makes inevitable a continuing re-evaluation of its function, as well as its strengths and weaknesses. Some of these weaknesses were the result of limitations in personnel, time, equipment, and space. These problems were recognized and we did not allow them to inhibit materially the progress of the program.

This demonstration project was created to evaluate the usefulness of optical and non-optical types of visual aids in the rehabilitation of the near blind. However, as the project matured it was the feeling of the team that the broader purposes and philosophy of the Visual Aids Clinic was to support to the fullest the available vision of all persons who have reduced visual acuity. Therefore, our efforts ultimately included young and old, the limited vision

group (less than 20/70 in the better eye) as well as the legally blind group (less than 20/200 in the better eye). Finally, the Visual Aids Clinic offered its services to patients having unresolved visual problems, without setting an upper visual acuity limit for eligibility.

3. Background

At the time of establishment of the Visual Aids Clinic, valuable experience was gained from visits made by the Project Director and the Visual Aids Clinic optometrist to optical aid clinics at the Industrial Home for the Blind in Brooklyn, New York, the Lighthouse for the Blind in New York City, the University of California Optical Aids Clinic in Berkeley, and the Visual Aids Clinic of the Stanford University Medical School in San Francisco. Discussions with physicians, clinic directors, and technicians were invaluable in implementing our program. All of these clinics contributed to our awareness of the possibilities as well as the limitations of our own program.

II. CLINIC FACILITIES AND EQUIPMENT

1. Location

A permanent location for the visual aids clinic was established in the eye clinic area on the first floor of the Oscar Johnson Institute at Washington University School of Medicine. This area was made available by the Washington University Clinics as part of an agreement to render visual aid services to the Washington University clinic patients. The permanent location, an area of 220 square feet, included an ample consultation-examining room and a secretarial office. The visual aid clinic was contiguous with the refraction facilities of the general eye clinic, permitting us to expand our work areas when needed.

The alterations in the visual aid clinic permanent location were completed in 1962. Subsequently, an extensive remodeling of the entire clinical facility of the Department of Ophthalmology enabled the visual aids project to move to new quarters of approximately the same area but incorporating design improvements. The most valuable of these were: ample waiting room space and ample storage space for the materials used by the visual aids clinic.

2. Equipment

The visual aids clinic was equipped with the following:

A. Basic ophthalmological examination equipment, comprising those diagnostic instruments essential for complete clinical eye examinations (appendix A, Table I).

B. Basic refraction equipment for routine eye refraction (appendix A, Table II).

C. Optical aids. A variety of optical aids was employed in the special phases of refraction related to subnormal vision (appendix A, Table III). Aids were made available on a loan basis so that patients could test their function under the patient's usual conditions of use - at home or on the job - rather than base our final prescriptions on the somewhat atypical environment of the visual aids clinic. Devices available for loan are listed in Table VIII, appendix A).

D. Contact lens test lenses and pertinent equipment. Since contact lenses were projected as a device for assisting certain visual aids patients, it was deemed advisable to equip the visual aids clinic so that such tests of visual acuity could be performed and the feasibility of contact lenses as an optical aid explored.

III. ORGANIZATION

1. Personnel (appendix A, Table IV)

The visual aid clinic was conceived as a "team project," in order to fulfill its functions as a demonstration project, an arm of the residency training program, and a community service facility. The personnel included:

A. The ophthalmologist project director who served as coordinator of the visual aids clinic team, and as teaching consultant. The latter function was shared, throughout the project period, by another consultant chosen from the faculty of the Washington University Department of Ophthalmology.

B. The optometrist, who was in charge of the fitting of optical aids. The visual aids clinic was fortunate in securing the services and the interest of an outstanding contributor to the field of ophthalmic optics who had maintained a relationship with the Department of Ophthalmology over more than two decades as the director of the aniseikonia examination facility. This optometrist was able to conduct the special optical aids refractions, instruct patients in techniques of use of these aids, assist with patients in follow-up visits, and was qualified to provide resident instruction in the theory (optics) as well as the practical use of optical aids.

C. The Resident in Ophthalmology, each of whom in his second year of training spent three months in the visual aids clinic. In this period he examined each patient, performed refraction examinations under supervision of the consultant, and received training and experience in the theory and use of optical aids. In this training period, the resident ultimately assumed the responsibility for determining the type of visual aid needed.



The resident, through the visual aids clinic, was provided training in the handling of difficult refraction problems as well as in the dispensing of optical aids.

D. The social worker. One of the functions projected for the visual aids clinic was the training of social workers so that they might better appreciate the problems of the partially sighted and their needs in relation to adjustment to optical aids. It was no great surprise, however, that the social worker designated by the Social Service Department of the Medical School very rapidly established a feeling for the problems and needs of this special group of patients, and was able to make a vital contribution to the management of the visual aids patients.

The creative thinking and critical evaluations of our social worker were invaluable in the development of the project. Her role will be amplified in Section D of this report.

E. Secretary-receptionist. The visual aids clinic shared a department secretary on a half-time basis. Her services were utilized in making appointments, writing letters to referral sources, compiling reports, and acting as visual aids clinic receptionist.

In addition to the personnel noted, other Washington University Eye Clinic facilities available to the visual aids clinic patient included a well-equipped optical shop and the Department of Ophthalmology laboratories. The optician maintained a supply of those optical aids which were prescribed frequently.



2. Financial structure

During the four years of the grant period, the visual aids clinic was supported by grant funds and by funds from the Department of Ophthalmology. Revenue was generated by fees charged to private patients at the visual aids clinic. New patients were charged \$10; returnees \$5. Eye glasses and optical aids were provided to patients by the optical shop at the same fees charged for patients of the general eye clinic.

3. Patient scheduling

The visual aids clinic scheduled patients three mornings a week. On the first two of these, appointments were made for two new patients, and two to four returnees. Each new patient had an eye examination and refraction by the resident, an interview by the social worker, and special optical aids study by the optometrist. On the third day all the new patients for the week returned for consultation. The consultant conferred with the visual aids team on their findings, examined the patient himself, and reviewed the recommendations with the group. The recommendations were discussed with the patient, and after instructions in the use of the aid, a prescription or a "loaner" and return appointment were given to him. Two to four returnees were also seen by the consultant and the team on the conference day each week.

4. Referral sources

Patients for the visual aids clinic were drawn from the following sources:

- (a) Washington University Eye Clinic, other eye clinics.
- (b) Ophthalmologists in private practice.

(c) Public service agencies such as the Missouri State Bureau for the Blind and its Vocational Rehabilitation Division; and the Missouri School for the Blind.

(d) Private service agencies such as the St. Louis Lighthouse for the Blind.

No patients were seen without referral from one of the above sources.

Table V (appendix A) presents a statistical analysis of these groups as patient referral sources.

Of the 573 new patients examined during the grant period, the greatest number (37%) were referred from the Washington University general eye clinic. This was not unexpected. However, in view of the stated primary goal of this demonstration project, the number of referrals from the Missouri Division of Vocational Rehabilitation was surprisingly small (8.8%). This small sample was attributed to several factors: (a) persons in the age group of 20 to 60 appeared to have little incentive to alter their job and living patterns, so that applicants in this age range were not numerous, (b) some considerable time was required for the visual aid clinic and the state agency to understand each others' needs in terms of basic information. This latter question of communications showed substantial improvement with the passage of time and with a better understanding of the areas in which each organization could serve the patient's needs.

5. Communications methods for referral sources

A. Because of the nature of this project as a demonstration in rehabilitation, and the role of the visual aid clinic as a "subspecialist," the mechanisms of communications through this clinic were a most important consideration. Without adequate referral information to guide the visual aids team, it would not be possible to relate our findings to the patient's overall needs as well as his potential. Likewise, a failure on the part of the visual aids team to communicate its findings fully to the referral source would, in a measure, nullify its own work.

B. For each patient referred from the general eye clinic to the visual aid clinic, the full medical record was made available so that all preceding eye care was studied before the visual aid examination. In turn, the full visual aid clinic records were available to the resident and consultant in the general eye clinic.

C. Ophthalmologists in the St. Louis area were supplied with referral sheets on which to summarize the case records of referral patients (Form I, appendix B). The referring physician's report of visual acuity, diagnosis, and purpose of the referral were useful as a guide in our investigation of the patient. At the conclusion of our study, the referring physician received a report, either on a visual aid clinic report form (Form II, appendix B), or by means of a letter. In addition the resident or consultant contacted the referring physician by telephone whenever indicated.

D. Generally, private service agencies, such as the St. Louis Lighthouse for the Blind, made their referrals directly. When a patient had not been examined for several years, he was referred to the general eye clinic for evaluation before the visual aids clinic examination.

Public service agencies, such as the State Department of Vocational Rehabilitation, were encouraged to indicate the specific nature of the training project so that proper evaluation of the patient's potential could be made, and so that the recommendations for optical aids could be related to the occupational need.

As experience in the visual aids clinic developed, it was found that we were handling a somewhat larger number of children (under age 20) than had been reported previously in other similar projects. Where data as to age was noted in these reports (references 1, 4, 5, 6, 7, 14), some 14-15% of 1100 or more patients were age 20 or younger. In the present study more than 30% of our patients fell in the 20 year or younger age range (Table XIIA, appendix).

More than half of the children in our study were referred by the Missouri School for the Blind, located in St. Louis. A close rapport with the administration of the Missouri School for the Blind was established early in our project. It was based on (1) the proximity of the two institutions, (2) the established practice of having the Missouri School for the Blind students (both residential and commuting) examined routinely at the Washington University eye clinic, and (3) the perceptiveness and progressive attitude of the Missouri School for the Blind administration. While one would anticipate that such

an institution would welcome the aid offered by a clinic such as ours, we learned that in some other states residential schools were having difficulty in moving away from the static concept of a domiciliary function with a Braille-oriented program. The Missouri School for the Blind, however, had rapidly adopted the dynamic philosophy characterized by the progressively greater use of sighted-learning techniques. The M. S. B. administration quickly seized the opportunity to explore the sighted-learning potential of each child, with the result that the visual aids clinic found itself with a substantial referral course, and the Missouri School for the Blind with new data on its students.

In addition to the information available in the general eye clinic case record, for each child the Missouri School for the Blind furnished the visual aids clinic with a detailed referral sheet (Form III, appendix B) from the child's teacher as well as the administrator (counsellor). This information sheet provided background on scholastic potential and achievement. In turn, the visual aids clinic reported to the school (Form II, appendix B), and in addition maintained contact with school personnel, both by telephone and occasional personal visits.

IV. INTERVIEW AND EXAMINATION

1. Social work interview

The role of the social worker in this project may be described best by that member of the team. In a departmental report on the visual aids clinic, she stated: "In the visual aid clinic the social worker is the person who sheds light on the following areas: the social situation; a developmental history, if it is appropriate; relationships within patient's family and community; other problems existing in the situation or patient that might affect the use of optical aids; the adjustment of the patient and/or family to the visual handicap, or to other medical problems, or to other adversities in their life situation; the expectations that the patient has; and some prediction of how well the patient will do with the optical aid. In general, the social worker is expected to develop an evaluation of the patient and his situation and an assessment is made of the factors that we presume have bearing on the patient's future use of an optical aid."

Since the information from the patient was often sketchy, an attempt was made in as many cases as possible to amplify the findings by interviewing a member of the family, in addition to the patient. In a few instances, multiple interviews were utilized. The material generally covered in this interview is summarized in the appendix (Form IV, appendix B).

Although the project was new to all members of the team, the efforts were at times frustrating to the social worker, since there was, at the outset, no clear delineation of the goals of the visual aids clinic. Therefore, the interviews could not be pin-pointed initially. By the end of the second year, the population groupings and our experiences were fairly well crystallized, and it was possible for the social worker to correlate her interviews with the clinic's objectives.

From the standpoint of the consultant, the social worker's reports on each patient provided some of our most important data in that it enabled us (a) to predict our probabilities of successful utilization of an artificial aid, (b) to relate our treatment program to the occupational needs of the patient, and (c) to determine the extent of patient and family indoctrination required. It is true that the physician members of the team would make such judgments to some degree, in any case, but impressions derived from an interview by an experienced social worker were found to be invaluable. Her reactions to the interview became part of the team conference, before the consultant met each patient. If the patient's personality patterns, feelings or emotional needs had a potential bearing on his visual aids clinic care, or if the aid prescribed might make significant changes in the patient's environment, with attendant new adjustments - in such instances the social worker was able to share these impressions with the team.

In our project the social worker generally interviewed the patient at the follow-up examinations (at 3 and 12 months), but she did not assist in the optical aid indoctrination of the patient. Her experiences in the clinic, however, made her a reliable observer of the factors influencing acceptance or rejection of a given aid. The social worker was able to provide direct services to the patient and to the family (in the case of private referrals, with the concurrence of the referring physician). When no optical device was prescribed, the patient was able to express that disappointment in an interview and be given some understanding by the social worker. However, on-going casework

help was not possible in this project because of (1) limitations of the social worker's time, and (2) a high proportion of patients who were inaccessible geographically or who were elderly and unlikely to benefit from such a service.

The functions of the social worker, her role in communication, and her emphasis varied somewhat with the nature of the referral. In referrals from the Vocational Rehabilitation Division of the Bureau for the Blind the social worker often was able to aid in resolving the gap between the Rehabilitation counsellor's question: "What can the patient see to do?" and our question: "What do you want him to see to do?" Referrals from the Missouri School for the Blind were accompanied by a referral sheet (Form III, appendix B) giving information on the child's environmental and social adjustment, his school work, and any family emotional and behavior problems. This sheet also presented questions from teachers and school counsellors. The social worker explored these areas through contact with the children, with the Missouri School for the Blind counsellor and, whenever possible, with parents. This information was then discussed at the visual aids clinic team conference.

Other partially sighted youngsters from the St. Louis area had social work evaluation of both children and families, for three reasons: To quote our social worker:

"1. There is perhaps no other type of situation in which one finds the feelings, attitudes and opinions of parents, relatives, friends, teachers and physicians so strongly operating. We have found that utilization of a visual aid and/or utilization of the recommendations of the clinic are directly related to these attitudes and opinions on the part of all these interested people, and unless we understand them, the best evaluation in Visual Aid Clinic is not put to effective use.

"2. The child's other capabilities and limitations (intellectual, emotional, behavioral) need to be known. Very often the visual problem is the peg upon which all difficulties are hung. It is our responsibility to assess visual capabilities and to point out where these visual capabilities or limitations are helping or hindering the child's functioning. In order to strengthen the recommendations we make based on this assessment, it is necessary to point out if possible to parents and school when and where we have evidence that there are factors operating in addition to the visual one.

"3. It is important to know what educational resources are available to the child and family - and to know how well parents and schools are communicating. Oftentimes the parents are bringing the child to the clinic in order to obtain an opinion on the type of school that the child should attend; oftentimes it is evident that even when the child is already in school, neither parents nor school are clear as to what the expectations for the child's performance should be. In most every instance it is important not only to consider what can be done to help the child, but also to help family and school plan for the best type of educational program that is possible."

Many other patients, private or from general eye clinic, were evaluated by the social worker. Situations which served to present a potential for improvement from social work evaluation included: (1) family and social problems interfering with or in addition to the visual problems, (2) teen agers having trouble with school work out of proportion to their visual problems, (3) "on-the-job" difficulties in adults, (4) recent loss of vision, (5) situations in which communication seem lacking between patient and school or community resources, or (6) where patient was resisting, not understanding, or not following medical recommendations.

At the outset of the project, the social worker planned re-evaluation of all patients, with the research objective of appraising patient performance in relation to the optical aid prescribed. An elaborate inventory was developed, but difficulties in obtaining consistent follow-up interviews invalidated these data, from a research or predictive point of view.

Although our data was incomplete for some sub-groups in this study, the Missouri School for the Blind provided a group of patients who were studied carefully and whose experiences with visual aids could be evaluated by comparisons within a homogeneous group. The majority of these children had follow-up study at 3 and 12 months. After two and one-half years we were able to collect significant data on the utilization of, and performance with, optical aids for 35 children at the Missouri School for the Blind. Observations were reported on a summary sheet (appendix B, Form V) by the teachers and counsellors at the Missouri School for the Blind.

It was hoped, at the outset, that a detailed evaluation of visual aid performance could be achieved for children who were attending schools with normally-sighted children. However, it was not possible to pursue this avenue of investigation in sufficient detail to be able to evaluate the results. In appendix B, Forms VI and VII list the data which was sought from teachers and parents.

2. Ophthalmological examination

Following the social worker's interview, the patient was examined by the ophthalmology resident. His examination included:

a. Eye and vision history

Study of the report forms (appendix B, Form III) will reveal the emphasis on the visual history, evaluating patient's mobility, his visual activities, his present use of glasses and optical aids, and his expectations from the visual aids clinic examination.

b. Visual acuity measurements - with and without glasses, for distance and near vision.

The vision test charts generally available and used at the usual 20 foot distance, provided only rough gradations of visual efficiency. For example, the largest Snellen letter, having an acuity rating of "20/200," represented a visual efficiency of 20%, while the next size letters, "20/100," represented a visual efficiency rating of 49%. For the Visual Aids Clinic patients, test distances of 10 feet (and sometimes 5 feet) were used. This procedure allowed us to interpolate several additional gradations.

For example:	<u>Acuity at 10 feet</u>	<u>Equivalent at 20 feet</u>	<u>Visual efficiency</u>
	10/400	20/800	0.1%
	10/200	20/400	3%
	10/100	20/200	20%
	10/80	20/160	29%
	10/70	20/140	34%
	10/60	20/120	40%
	10/50	20/100	49%

For reading vision, the distance at which the patient achieved maximum visual acuity was recorded (in inches), and the type size which could be read was recorded in printer's "point" type (e.g. "8 point type at 4 inches").

c. External and ophthalmoscopic examination.

Where required, intraocular tension tests, visual field examination, and keratometry were also performed. A clinical diagnosis was made for each patient.

d. Refraction examination, for near and distance.

Use of cycloplegia depended on age, race, problems with central fixation, and difficulties with subjective responses in manifest refraction.

e. Special optical aids testing was performed initially by the optometrist. After instruction, each resident then assumed responsibility for this phase of the examination also.

The examination findings were reported on a visual aids clinic history-examination form (Form VIII, 1, 2, 3, appendix B). On this same report form, after the team conference, the recommendations were recorded. Later follow-up evaluations were appended.

3. Refraction

The refraction examination was performed with cycloplegia (and generally followed by a post-cycloplegic examination; or, the cycloplegic findings were correlated with a preceding manifest refraction). The refraction technique was essentially the same as performed by the residents on all general clinic patients, with these exceptions:

a. Refractions in visual aids clinic required a longer time, and more detailed rechecking.

b. End points were less precise and lens comparisons necessarily involved greater differences between lenses in order for the patients to make consistent subjective responses. For this purpose, we employed cross cylinders of ± 0.75 and ± 1.00 power.

c. Illumination for near testing required flexible light sources which could be interposed between the patient and reading material.

4. Testing with optical aids

In the optical aid refraction, a distance examination with telescopic lenses was frequently done to evaluate the distance vision acuity potential, and also as a means of encouragement to the patient. The number of telescopes actually prescribed was small (see section on Results). For near vision tests the initial plus lenses for magnification were chosen on the basis of distance vision acuity measurements. Most patients were tested with lenses which could be fitted in frames, freeing both hands.

Under ten diopters, trial case spheres were used. From 8 to 24 diopters spherical microscopic lenses were tried. From 12 to 48 diopters, glass or plastic aspheric lenses were used. In selected cases, patients were tested with telescopes equipped with a reading add in the form of a lens cap.

Hand-held lenses proved useful in some cases, particularly in older patients who were already accustomed to them. The plastic aspheric stand cataract reader found some uses, as did illuminated magnifiers.

A list of the aids employed for distance and near is appended (appendix A, Tables VI and VII). Those items starred (*) were available as "loaners" for the patients to try at home or at work.

5. Conference

The patient at the visual aids clinic was seen on two days, the first being devoted to examinations and the social worker's interview. At the return visit, the entire team conferred on the findings of the social worker, the resident, and the optometrist, and a program of treatment was formulated.

At this time the consultant had the opportunity to examine the patient, and to review the examination and refraction data which were of especial interest. Finally, a detailed discussion of findings and treatment was held with the patient (and family). The weekly conferences also took up the evaluation of returning patients.

One of the most practical aspects of our therapeutic approach involved the use of optical aids on a "loan" basis, so that the patient was able to try the recommended device under his home (or job or school) conditions of lighting, seating, etc. In this manner those who could not adapt were generally weeded out without damage to their pocketbooks. Often, a patient not a candidate for benefit from an aid was given the chance to adjust to this fact through his home trial of an aid. Such an approach was less traumatic than the bluntly devastating "We cannot help you."

Patients who were initially resistant had the opportunity to acquire some skills. Often, patients found that, at home, they were able to apply their optical aid in ways that had not occurred to them in the examination and interview.

It has been the experience of most persons working with optical aids that as the patient acquired facility with such a device, the lens power needed could often be reduced. Thus a patient might work for several weeks with a +20 diopter aspheric lens as a "loaner," and eventually be able to accept a prescription for a +15 diopter similar lens.

V. FOLLOW-UP

Each patient who was fitted with an aid was advised to return for further evaluation. These return visits were undertaken at varying intervals on the following bases:

- (1) Every patient was instructed to return after three months for routine evaluation of his ability to utilize the device prescribed, and to determine what effect it had on his adaptation at home, how it influenced his job or education, and to detail those areas of visual improvement achieved.
- (2) For the same purpose a follow-up visit after one year was scheduled for each patient.
- (3) In addition to the 3 and 12 month visits, some patients were instructed to return at the end of 1, 2, or 4 weeks to evaluate a device loaned, to make necessary changes, or for purposes of instruction and encouragement.
- (4) Some patients were evaluated at 6 and 12 month intervals if it was felt that their refraction or pathologic process was likely to undergo change.

On the whole, the average number of return visits made by each patient for whom an aid was prescribed was 2.6. In the Missouri School for the Blind group, susceptible to closer follow-up control, the average was 3.2 (appendix A, Table IX).

Table VIII (appendix A) summarizes the remarkably high proportion of patients who returned to the visual aid clinic for follow-up evaluation. The total of 530 represented 92.5% of all patients seen. Even more remarkable is the fact that patients not living in the greater St. Louis population area

(some of whom traveled 250 to 400 miles to St. Louis) recorded almost as many returns (averaging 2.5 visits per patient) as did the patients from the St. Louis area (2.7 visits per patient).

Table IX (appendix A) shows that the group subjected to most detailed study, from the Missouri School for the Blind, averaged 3.2 return visits per patient. From this referral source, 68% of the children made three or more return visits, while from each of the other referral sources, 50 per cent or less of the patients made three or more return visits.

VI. RESULTS OF STUDY

The information gathered for each patient was tabulated, utilizing a simplified punch card data processing and sorting method. The card used, and information tabulated is shown on Form IX, appendix A. In addition to the usual vital statistics, this card permitted a study of diagnoses, visual acuities, optical aids employed and the success achieved in their utilization.

In classifying the utilization of an aid as "good," "fair," or "poor," the following criteria were employed:

1. "Good" use of the aid indicated that the patient fulfilled one or more of these requirements:
 - a) Improved job functioning, or improved information-getting capability in school, by improved visual acuity.
 - b) Persisting and regular use of the device (even if only short periods but on a regular basis).
 - c) Improvement in performance without improved visual acuity. An example would be a child who can read school texts without glasses by holding the printed material very close to his eyes (1'-4") but who could perform the same function with visual aid spectacles, with less discomfort and greater efficiency.
 - d) Positive subjective reaction to the aid, the patient being enthusiastic about his utilization in his home environment even though our objective measurements showed little benefit.

2. "Fair"utilization involved:

a) Limited benefits of which the patient was subjectively aware.

An example would be an aid which was not sufficient to restore reading capability for printed material, but enabled the patient to read and write letters. Although this aid provides a visual experience previously denied to the patient, he may be unhappy because it falls short of his expectations for reading. If it was his decision to retain the aid, we have interpreted this as "fair" utilization.

b) If visual acuity was substantially improved, but reading or work tolerance was markedly limited, this was interpreted as "fair" utilization. E.g., reading span limited to 2 to 5 minutes was often reported by elderly patients, many of whom exhibited limited motivation.

3. "Poor" utilization was defined as rejection of the aid, or failure to continue its use after a period of time, for any reason.

Table X, Appendix A, lists the number of patients tested with optical aids for distance only, for near only, and for both; the same table shows the number of such aids prescribed. Table XI summarizes the types of optical aids prescribed for distance vision and their utilization based on the classification described. The 76% who achieved "good" or "fair" utilization occasioned no surprise since the group included a high proportion who had not worn glasses previously, and another group who had the benefit of "loaners" before obtaining their aids. The small number of failures (3%) may be misleading, since it can be inferred that a substantial fraction of those on whom we have no evaluative data were disappointed and simply did not return.

Table XII, Appendix A, lists the prescribed aids for near vision and their utilization. The successful use of these devices parallels the findings with the aids for distance vision. Of particular note, in this clinic, is the large number of patients - 296, or 87.5% - for whom spectacle type aids were prescribed for reading. Once again, this large number and the accompanying success in using headborne lens devices could be attributed, at least in part, to the practice of lending such aids on a trial basis. Any patient who could not achieve some measure of success with the temporary "loaner" was not given a prescription. Table XII includes only those patients who actually purchased the optical aid.

1. Age-sex distribution

These data, summarized in Tables XIII and XIV, Appendix A, show that 30.4% of our patients were under age 20 (school age) and 39.1% over age 60, i. e., beyond the usual age for substantial vocational rehabilitation in the form of training of basic job skills and providing special education.

Only 156 (27.2%) of our patients between ages 21 and 60 were subjects for rehabilitation, in the limited sense of the term as defined above, and in the context of the original grant application. Of this number, 29 patients comprising 18.6% of this age group (or 5% of the entire study) were referred by the Vocational Rehabilitation Division of the State of Missouri. An additional nine referrals from this division were under age 20, and 12 were over age 60, a total of 50 referrals by the Vocational Rehabilitation Division (Table XV).

2. Rehabilitation value

Assessment of the value of optical aids in vocational rehabilitation was limited to the patients referred by the Missouri Vocational Rehabilitation Division. In this group, the act of referral by this agency was an indication of a level of motivation, thus minimizing one variable in the study of the group.

Classification of the extent of rehabilitation through the use of optical aids was limited to three broad categories:

a) "Much" (rehabilitation value) - indicated by resumption of a job which had been discontinued or curtailed because of visual problems; increased responsibilities or activities in a present job; voluntary reading for a person who had been a non-reader.

b) "Some" (rehabilitation value) - indicated by an enhanced range of general activity at home, in recreation, as well as improved performance in present job.

c) "None" in terms of rehabilitation value involved no significant alterations in vocational or avocational activities, even though such a patient may have achieved good or fair utilization of his aid in reading, etc.

It is recognized that the criteria chosen are necessarily general and that the lines of division between the groups are blurred and overlap. However, it was felt that no more detailed evaluation would be meaningful in this study.

When we consider the rehabilitation potential for patients under age 21, most of whom are students, a modification of our criteria for rehabilitative assistance is in order.

"Good" rehabilitation value involves a change in school, or in classroom, as a result of improved learning potential; or a sustained change in information-getting media - as, from Braille to sight conservation texts; or from sight conservation texts to regular school books; or, increased outside reading interests.

"Fair" rehabilitation value involved increased work tolerance for present information-getting media; improved classroom performance, improved self care, and better social adjustment.

In the under age 21 group, Table XV shows the rehabilitation appraisal and points up the most significant beneficial results of the four year study.

From a study of the rehabilitation evaluation summarized in Tables XVI and XVII, it can be seen that the rewards from this study, in terms of number of patients aided in their jobs or schooling, are small in relation to the total visual aids clinic program.

Of the nine Vocational Rehabilitation referrals under age 21, the rehabilitation effort produced these results:

a) One patient, working at the St. Louis Lighthouse, had bifocal aphakic spectacles, could read 6-point type with them, and adapted to them well. However, his status at his job was unaltered because of limitations in his learning capacity.

b) Six patients, all having "good" or "fair" utilization, were in school. Five of these received aids for near as well as telescopic aids for distance (in school work). Four were attending college; the other two, high school. All were considered as having benefited from the aid, in terms of vocational rehabilitation, since their learning techniques were improved. In 3, it was judged that the aids were of "much" help in school work; in the other 3, of "some" help.

c) Two children in this group had no follow-up data (Table XVI A).

In the 21-60 year age group, 22 of the 29 referrals from the Missouri Vocational Rehabilitation Division were judged to have "good" or "fair" utilization of their optical aids (Table XVII, Appendix A). Six of these were considered to have acquired improved vocational status by use of these devices: They included:

a) A 30 year old male for whom a spectacle-type aid freed both hands, aiding in performing jobs at the St. Louis Lighthouse.

b) A 33 year old man using an American Optical microscopic bifocal for work as a small-parts assembler.

c) A 37 year old woman, employed as a dictaphone-typist, uses a +30 D. conoid spectacle to check her work.

d) A 32 year old woman aided greatly in farming, by a telescopic aid; and in reading, by using a plus lens cap.

e) A 37 year old woman who formerly worked as a packer at the St. Louis Lighthouse for the Blind, now uses a pair of high plus spectacles as a packer in an automobile parts factory.

f) A 44 year old woman used a +15 D Volks conoid lens to take special training as a teacher of mentally retarded children.

In addition, three of the 21-60 year group were considered to have had "some" rehabilitation benefit from their optical aids. While the total number of beneficiaries is small, it must be stressed that most in this age group have already made some form of socio-economic adjustment and would appear to have less motivational drive. Support is lent to this observation by the fact that 66% of the Rehabilitation patients under age 20 were benefited, compared to only 31% in the 21-60 year old group.

3. Etiology of visual improvement

The over-all population showed essentially the same etiologic incidence of poor vision as has been reported by other such studies. (1, 5, 7) Table XVIII (Appendix A) lists the sites of involvement and numbers of visual aid devices prescribed for each. Since most patients had more than one factor causing visual impairment (e.g., a patient with cataracts and senile macular degeneration), the totals are of relative significance only. Of greater interest are the percentages of patients who received optical aid prescriptions for each group. One finds the percentage of aids to be strikingly similar (between 60 and 70%) no matter what the site of involvement.

Some 37% of the population had visual defects associated with the retina-choroid and macula. These diagnoses and their frequency are listed in Table XIX (Retina-Choroid Pathology) and Table XX (Macular Pathology), of Appendix A.

It is evident that, with few exceptions, the nature of the pathologic process and the site of involvement bear little relationship to the capacity of the patient to benefit from an optical aid.

4. Optical aids for distance vision

The types of visual aids prescribed for distance are listed in Table XI. It should be noted that spectacle lens prescriptions were classified as "special optical aids" if the lens correction exceeded \pm 6.00 diopters (or astigmatism exceeded 4.00 diopters) in a person whose refractive error had not previously been corrected by such lenses. The term "regular glasses" was limited to those refractive errors of less than the above amounts.

Despite the generally pessimistic attitude toward the benefits of optical aids for distance, 122 such aids were prescribed in this study. Of this number, 31 were telescopic devices - 15 monocular and 16 binocular.

Table XXI summarizes the utilization of these aids to distance vision, by age groups. Although patients under age 21 made up 30% of the population in this study, they accounted for 52% of the distance aids prescribed. This may be explained by their greater usefulness in classroom activities at school, as well as by the greater adaptability of children.

Table XXII shows the degree of improvement in visual acuity produced by all types of distance vision aids. This table shows that 27% of patients thus fitted recorded improvement of one line in visual acuity, while 38% improved two or more lines. Altogether, 74% were judged to have good or fair utilization of their devices.

For those using telescopic distance aids, the distance vision was improved by one line in 5 of 31 cases (16%), but two or more lines in 22 cases (71%) of cases (Table XXIII). Telescopic devices accounted for 11% of distance aids used by patients under age 21, and for 41% of distance aids for patients over age 21. The younger group contained many more patients who required simply high plus or minus corrections, not previously worn.

In terms of utilization, Table XXI shows that 74% of the distance aids were rated as "good" or "fair." In the under 21 group, the "good" and "fair" utilization was 84%, but only 62% for patients over age 21. The same factors which explain the increased numbers of distance optical aids in the "under 21 years" group would also explain the significantly greater success in using them.

5. Aids for near vision

Aids for near vision accounted for 77% of all the optical aids prescribed. Here the emphasis was on the older age groups (Table XXIV) since the powerful accommodation of the school age patients enabled many of them to achieve the desired magnification simply by holding their reading material at very short distances. The effectiveness of these aids is also tabulated in Table XXIV and shows that those children who required optical aids for near proved to be more adaptable and their over-all utilization was significantly better than in the older groups.

It was possible to predict, with some accuracy, the prospects for use of a near vision aid from the distance visual acuity measurement (Table XXV). Of course, the distance at which these reading aids were used lessened as the distance acuity diminished and as the dioptric power of the lens device increased.

Of particular interest here is the observation drawn from these data that satisfactory near vision was achievable in a very large percentage of patients. For example, in persons having visual acuity for distance of 20/200 or less (the "legally blind" person), 40% could read 6 point type, and an astonishing 92% could manage 12 point type or better, using an optical aid. It should be noted that these data reflect testing methods which involve the ability to read letters or numbers, and the percentage of patients who could translate this acuity into successful, sustained reading or other near vision tasks would be somewhat smaller. (Table XII analyzes the successful utilization of optical aids for near tasks.)

Table XXVI compares the near visual acuity without glasses (or with regular glasses) to the near visual acuity achieved with optical aids.

The types of aids used to improve near vision varied widely, but a large proportion consisted merely of the higher power plus spheres used as single lenses (15%) or as bifocal adds of +5.00 diopters or more (40%) (Table XXVI).

It is readily apparent that the great area of usefulness with optical aids lies in their ability to facilitate close work, especially reading, through image magnification.

6. No optical aids prescribed

Review of the records revealed that 144 patients in this series had no tests performed using special optical aids. Of this number, only 18 (6.6%) were felt to have such poor vision that no aid could be attempted. Another 36%,

mostly children, could read 12 point type or better, and did not require lens magnification at their present scholastic level.

Finally, only 80 patients in the entire study (14%) did not have study with optical devices, for of one of the following reasons:

- a) Referral for medical evaluation
- b) Referral for eye surgery
- c) Inadequate patient cooperation
- d) Physical disabilities limiting use of any optical aid.

VII. EVALUATION

1. Primary goals

Although the primary goals of this project centered about the prescribing of optical and other visual aids for the purpose of vocational rehabilitation of the partially-sighted, the need for modification of this goal became evident early in the project. Observations which indicated a need for such modification were: (1) the unusually large percentage of children included in the population of this study; (2) the relatively small number of patients between the ages of 20 and 60; (3) the absence of motivation in this 20 to 60 year old age group for job re-training; (4) the adaptability of the age group under 20 years, as manifested by increased educational potential.

The school-age group (under age 20) required, therefore, a re-defining of "vocational rehabilitation," as it became evident that more available tools for learning were being afforded to this group. The broadening of the educational span within this group will ultimately mean a broader range of vocational opportunities. In addition to the intrinsically greater adaptability and motivation of this age group in our study, stimulation was provided by a progressive, interested group of educators at the Missouri School for the Blind, the St. Louis County Special School District and by numerous other teachers throughout the geographic area encompassed by this study.

2. Secondary goals

The Visual Aid Clinic was intended to function as an education resource for residents in Ophthalmology at the University; for medical social workers; for school teachers of normally as well as partially sighted children; for practicing ophthalmologists; and, for the community as a whole.

The most satisfactory area in teaching occurred with the training of residents at the Washington University Department of Ophthalmology. Working with one resident at a time, it was possible to improve his awareness of the potential for visual rehabilitation of patients with all types of pathological processes, and to assist him in the refining of his refracting techniques by detailed evaluation of the refraction problems of the partially sighted patients. Each resident developed skills in dealing with this group of patients so that at the end of his tour of duty in the Visual Aid Clinic, he was capable of, and in fact was, assuming responsibility for the management of these patients.

The number of social workers exposed to this project was limited, and the instructional potential somewhat circumscribed, but it was the impression of the consultants that the social workers very quickly adapted their skills and training to the specific problems of the partially sighted, and were able to make a positive contribution to the program with little formal instruction from the medical consultants.

Contacts with teachers generally occurred in seminars or group meetings. In several instances, where the consultants addressed teachers of the handicapped in Missouri and Illinois, there was a strongly positive reaction to this type of amplification of their educational skills. It often occurred that teachers working with the partially sighted had not completely banished time-worn prejudices and obstacles to the optimum educational opportunities for these children. The same observations seemed to hold for school nurses.

The impact of this program on the ophthalmologists of the community is revealed by the large number of referrals from M. D.'s. However, analysis of these referral sources indicated that most of these patients had been referred by a small nucleus of eight ophthalmologists. In general, the change in attitude toward visual rehabilitation of the low-vision patients which was reflected on a country-wide basis, was also felt in the local medical group.

3. Patient response

Patients, especially the older ones, tended to approach their visual aid clinic experience with reserve, and not infrequently, with doubts and misgivings. Their previous experiences had, for the most part, not provided them with reason to expect new help at this clinic. It was the impression of the consultants that one of the most important assets of the clinic was the capacity to devote much time to each patient - to listen, to examine and to discuss the recommendations. The result was that patients reacted positively and were often willing to make a sustained effort to adapt, particularly with a device loaned to them for trial.

One interesting observation in the school-age group was that the children evaluated their optical aids, and even though they adapted well and benefited from them, they tended to make minimal use of them, using their own accommodation whenever possible. In the group over age 60, the well recognized increasing rigidity of the older years, the decreased economic need, the loss of motivation and the shortened attention span, all conspired to reduce the acceptance of optical aids. Many individual cases, however, provided dramatic benefits for the patient (and were therapeutic for the consultant, as well!).

Further, it was learned that ability to use a magnification device depended on basic distance vision acuity, not on etiology of the visual loss.

4. Selection of optical aids

This study produced greater numbers of successful uses of telescopic aids than has been reported previously. Undoubtedly, one reason is that the patients were carefully instructed in the uses and limitations of these devices.

A number of patients, mostly school children, adapted well to the use of a monocular clip-on telescope, especially in classroom. The telescope was used in audio-visual work and at the same time the other eye, fitted with a high plus aid, was used for reading or writing. This facility is not unlike the seeing habits of anisometropes (with one eye myopic, the other hyperopic).

There was a tendency to recommend practical, inexpensive devices. For near, a large majority of patients were fitted with ordinary spectacles containing high plus lenses or bifocal adds. It was found, quite early, that there was no special virtue in highly sophisticated magnification devices. The most exotic of all, projection magnifiers, proved to be almost completely without merit. In another example, telescopic aids to distance vision were as successful using an inexpensive 2.5 x adjustable "sportsglass" type of telescope as with the custom ground prescription telescopic lenses.

5. Problem areas

Foremost among the problems encountered in this project was the difficulty in obtaining adequate follow-up data on which to base an evaluation of the optical aids and patient response. The broad geographic distribution of patients, half of whom came from outside the metropolitan area and some of

whom travelled 300 or more miles to the clinic, constituted an obstacle. In addition, insufficient personnel was available to make a detailed utilization survey, which it was felt should have been done in some cases at the patient's house or on the job. Among the personnel problems was the fact that consultants were functioning part-time, with the usual attendant problems of interruptions, delays, and emergencies. In addition, the rotation of house staff (although desirable for teaching in this clinic) reduced the efficiency of clinic operation.

Finally, the economics of the clinic made it apparent that at the conclusion of the period of joint support from the Office of Vocational Rehabilitation and the Washington University, there would be gradually increasing problems. It was estimated that the per patient cost was \$60.00 - considering professional time, amortization and replacement of equipment, counselling time and the attrition of the supplies of "loaners."

Despite these problems, the community service aspect, as well as the teaching benefits, make it desirable that this Visual Aid Clinic become a permanent facility with the Department of Ophthalmology. Therefore, it has been continued on the same "sub-specialty" basis as the Glaucoma Division, the Retina Service, the Tonography Laboratory, and the numerous other clinical facilities within the Department.

6. Key factors

There appear to be three important factors in the successful operation of the Visual Aid Clinic. First, the team effort appears to yield maximum results and to have a maximum beneficial impact on the patient. Also, recognition is necessary of the

significantly greater time required to deal with the visual aid patient (especially children and oldsters, who predominated in this study). Last, the benefits of this type of patient care depend greatly upon the ability of a clinic such as this to recognize its role in communicating useful information to the interested referring individuals or agencies, as well as to the families of these patients.

VIII. CONCLUSIONS

Summing up, this Demonstration Project RD-226 has joined with others of its kind to lend credibility and sophistication to the entire task of the visual rehabilitation of partially sighted persons of all ages. Now, after several years, such activities are an accepted facet of the preparation of the visually handicapped child, as well as an aid in stimulating and broadening the interests of the elderly patient.

Appendix A

Table I

Basic Ophthalmological Examination Equipment

1. Slit lamp with gonioscopic and Hruby lens attachments
2. Ophthalmoscope and transformer
3. Finoff transilluminator and fixation light
4. Perimeter
5. Tonometer
6. Tangent screen and test objects
7. Occluder
8. 3x binocular loupe
9. Binocular indirect ophthalmoscope

Table II

Basic Refraction Equipment

1. Refraction unit (stand and chair)
2. Phoropter
3. Trial case and cabinet
4. Trial frame
5. Keratometer
6. Lensometer
7. Retinoscope
8. Projector
9. Cross cylinders ± 0.25 ; ± 0.50 ; ± 0.75 ; ± 1.00
10. Distometer (for vertex distance measurement)
11. Lebensonho (and other) near vision test charts
12. Sloan reading charts

Table III

Optical Aids for Subnormal Vision

(Used in Visual Aid Clinic Examinations)

1. Kollmorgen telescopic trial case
2. Volk-conoid aspheric trial set
3. American Optical microscopic test set
4. American Optical plastic aspheric set (8x, 10x, 12x)
5. Selsi 2.5x monocular telescope (clip-on type)
6. Aloe reading unit (telescopic)
7. American Optical projection magnifier (3x)
8. Contact lens trial set
9. Stand magnifiers, with and without illumination
10. Hand magnifiers, with and without illumination

Table IV

Personnel of the Visual Aid Clinic

1. Project Director-Consultant: Benjamin Milder, M. D.
2. Consultant (1960-62): Jack Hartstein, M. D.
Consultant (1958-60): William Meinberg, M. D.
3. Optometrist: Mr. J. Louis Stevenson
4. Social Worker (Department of Ophthalmology): Mrs. Joan Walsh*
(*At varying times during the grant period, other members of
the Washington University Medical School Social Work Department
aided in patient interview and evaluation)
5. Second year resident in Ophthalmology
In addition, valuable service was provided to the Visual Aid Clinic by:
6. Mr. Henry Potts, Optician, Washington University Eye Clinic
7. Visual Aid Clinic secretaries

Table V

Referral Sources

	<u>Local</u>	<u>Outstate</u>	<u>Total</u>	<u>Percentage</u>
1. Washington University Clinics	134	72	206	37.3
2. Private M. D. referral	87	61	148	26.7
3. Missouri School for the Blind	19	46	65	11.8
4. Missouri Prevention of Blindness Program	4	52	56	10.1
5. Missouri Vocational Rehabilitation	7	42	49	8.8
6. Private agencies	4	0	0	0.7
7. Illinois Vocational Rehabilitation	0	1	1	0.2
8. Referral source not available	3	20	23	4.2
Totals*	258	294	552	99.9+

*Some of the 573 patient records were not complete in all details. Therefore, the total number of patients will vary in these data analyses.

Table VI

Optical Aids Used for Distance Vision

1. Spectacle lenses, in frames, of high refractive power
2. Monocular telescope, 2x Aloe
3. Monocular telescope, 2.5x Selsi*
4. Prism monocular, 6x Bausch - Lomb*
5. Binocular telescope, 2.5x Selsi*
6. Binocular telescope, 3x Wollensak*
7. Penscope, 10x
8. Kollmorgen telescopic trial set
9. Ultex bifocal lenses (low vision series)

*Items available on a loan basis

Table VII

Optical Aids Used for Near Vision

I. Headborne magnifiers

1. Spectacle lenses, in frames, single vision spheric (8D. to 20D.)*
2. Spectacle lenses, in frames, single vision aspheric (10D. to 20D.)*
- ✓ 3. Volk conoid trial lens set (15 D. to 40 D.)*
- ✓ 4. Microscopic lenses (American Optical) (2x - 4x - 6x)*
- ✓ 5. Aolite plastic aspheric lenses (American Optical) (8x - 10x - 12x)*
6. Jewelers' loupe (clip-on)
7. Rim-klip spectacle loupe
8. Magnifocusser No. 5 (Edroy)
9. Plus sphere fit-overs for Selsi telescopes*

II. Hand magnifiers

1. Assorted sphere reading lenses (ATCO, Bausch-Lomb)
2. Illuminated hand lenses (Bausch and Lomb rectangular reader)

III. Stand magnifiers

1. Illuminated magnifier 3x (Bausch-Lomb)
2. Adisco magnifier 7x (illuminated)*
3. Igard Plasta stand magnifiers
4. Igard Plasta cataract reader (S 428)*
5. Illuminated stand magnifier (Burton or Dazor)
6. Focusable stand magnifiers (Sloan)
7. Chest magnifier
8. Bausch and Lomb or Selsi double hand magnifier, 3x - 3.5x - 6x

Table VIII

Return Visits to Visual Aid Clinic

(By Geographic Location)

<u>No. return visits</u>	<u>St. Louis area patients</u>	<u>Outstate patients</u>	<u>Total patients returning to Visual Aid Clinic</u>	<u>Percent</u>
1	49	77	126	22.0
2	58	69	127	22.2
3	47	56	103	18.0
4 or more	92	82	174	30.3
No return or no record	14	29	43	7.5
Totals	260	313	573	100.0

Table IX

Return Visits to Visual Aid Clinic
(By Referral Sources)

<u>No. return visits</u>	<u>Practicing physicians</u>	<u>Washington U. Eye Clinic</u>	<u>Mo. State Voc. Rehab. or Prev.</u>	<u>Mo. School for the Blind</u>	<u>Other agencies</u>	<u>Referral source not known</u>	<u>Totals</u>
1	38	56	16	11	0	5	126
2	41	44	29	6	1	7	128
3	37	34	23	6	1	3	104
4 or more	42	58	32	41	1	4	178
No return or no record	12	14	7	5	1	4	43
Percent having 3 or more returns	46%	45%	51%	68%	50%	30%	49%
Totals	170	206	107	69	4	23	579*

*The excess of 6 in this total reflects multiple referral sources in several instances.

Table X

Number of Patients Tested With Optical Aids

<u>Tested with:</u>	<u>No. tested</u>	<u>No. prescribed for distance</u>	<u>No. prescribed for near</u>	<u>No. prescribed distance and nea</u>
1. Distance aids only	26	20		
2. Near aids only	274		226	
3. Both distance and near	122			
a. Rx - Distance		16		
b. Rx - Near			39	
c. Rx - Both				61
4. No optical aids used	143			
Totals	565	36	265	61
Percent	100%	6.4%	46.9%	10.8%
	100%		64.1%	

Table XI

Optical Aids Prescribed for Distance Vision: Their Utilization

<u>Type of aid</u>	<u>Number</u>	<u>Utilization of Aid</u>			
		<u>Good</u>	<u>Fair</u>	<u>Poor</u>	<u>No data</u>
Spectacles-high myope	26	15	1	3	7
Spectacles-high hyperope	11	10	1	0	0
Spectacles-high astigmatism	10	7	2	0	1
Spectacles-aphakia	19	13	2	0	4
Monocular telescopes	10	5	3	0	2
Binocular telescopes	18	12	1	0	5
Absorptive lenses	4	3	0	0	1
Contact lenses	1	1	0	0	0
Totals	99*	66	10	3	20

*This number exceeds the total of distance aids prescribed as shown in Table X, because of the inclusion of one contact lens patient, and one patient who was given both spectacle and telescope prescriptions for distance.

Table XII

Optical Aids Prescribed for Reading Vision: Their Utilization

<u>Type of aid prescribed</u>	<u>Number</u>	<u>Utilization of Aid</u>			
		<u>Good</u>	<u>Fair</u>	<u>Poor</u>	<u>No data</u>
Spectacle lenses-single-hyperopic	51	25	7	5	14
Spectacles-bifocal: adds of < 10 D.	124	75	18	8	23
Spectacles-bifocal: adds of > 10 D.	11	5	3	1	2
AO microscopic 2x spectacles	18	10	2	3	3
AO microscopic 4x spectacles	19	13	0	3	3
Volk conoid 20 D. or less	26	15	6	3	2
Volk conoid 25-30 D.	20	11	1	5	3
Glass or plastic aspherics 32-35 D.	19	15	3	0	1
Glass or plastic aspherics 40-48 D.	8	4	1	0	3
Monocular telescope (with cap)	13	7	2	0	4
Binocular telescope (with cap)	2	2	0	0	0
Illuminated magnifier Adisco	4	1	1	0	2
Stand magnifiers	8	2	3	0	3
Hand magnifiers	14	7	2	1	4
Edroy head loupe	1	1	0	0	0
Totals	338*	193	49	29	67
Percent	100%	57.1	14.5	8.6	19.8

*This figure exceeds the total of near vision aids shown in Table X, by 12. These additional cases in the above table represent patients corrected by spectacle lenses not previously worn but not of sufficient dioptric strength to be considered as "special optical aids." They are included in the first category above.

Table XIII

Age - Sex Distribution

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Totals</u>
5 years or less	3	0	3
6 - 10	45	30	75
11 - 15	25	23	48
16 - 20	28	20	48
21 - 25	15	7	22
26 - 30	12	4	16
31 - 40	12	22	34
41 - 50	25	14	39
51 - 60	26	19	45
61 - 70	27	52	79
71+	80	65	145
No age given	10	9	19
<hr/> Totals	308	265	573
<hr/> Percentage	54%	46%	100%

Table XIV

Distribution by Age Groups

Age 20 and under	174	30.4%
Age 21 - 60	156	27.2%
Age 61 and over	224	39.1%
No age given	19	3.3%
Totals	573	100%

Table XV

Patients Referred from Missouri Vocational Rehabilitation Division

Age	Sex M F	Total patients	Ave.no. visits	Optical aid prescribed				Utilization of Aid*			No data
				Distance	Near	Both	No aid	Good	Fair	Poor	
0 - 10	0 0	0	-	-	-	-	-	-	-	-	-
11 - 20	7 6	13	3.4	0	3	6	4	7	0	0	6
21 - 30	9 4	13	3.2	0	4	9	0	6	2	0	5
31 - 40	5 6	11	3.3	0	2	7	2	5	1	0	5
41 - 50	4 3	7	2.8	0	2	2	3	3	0	0	4
51 - 60	3 0	3	2.3	0	2	0	1	1	0	0	2
61 - 70	1 0	1	3.7	0	0	0	1	0	0	0	1
71+	0 0	0	-	-	-	-	-	-	-	-	-
No age given	1 1	2	3.0	0	0	1	1	0	0	1	
Totals	30 20	50	3.0	1	12	25	12	23	3	0	24**
Percent	60% 40%			2%	24%	50%	24%				

* Utilization of distance and near aids was not included in this table since the percentages of "good" and "fair" use were alike (78% for distance aids; 76% for near aids) and were essentially the same as reported for

Tables XI and XII.

** Of this number, 12 did not return; 12 had return visits but data was insufficient to classify.

Table XVI

Rehabilitation Value of Optical Aid:

Missouri Vocational Rehabilitation - Age Group 11 - 20 Years

<u>Utilization of aid</u>	<u>No. patients</u>	<u>Value in Rehabilitation</u>			
		<u>Much</u>	<u>Some</u>	<u>None</u>	<u>No data</u>
Good	7	3	3	1	0
Fair	0	0	0	0	0
No data	2	0	0	0	2
<hr/> Totals		3	3	1	2

Table XVII

Rehabilitation Value of Optical Aids:

Missouri Vocational Rehabilitation - Age Group 21 - 60 Years

<u>Utilization of aid</u>	<u>No. patients*</u>	<u>Value in Rehabilitation</u>			
		<u>Much</u>	<u>Some</u>	<u>None</u>	<u>No data</u>
Good	17	6	2	9	0
Fair	5	0	1	3	1
No data	7	0	0	0	0
<hr/> Totals		6	3	12	1

*This number does not include patients recorded as having "poor" utilization of aid.

Table XVIII
Site of Visual Impairment

	<u>No. patients</u>	<u>Visual Aids Prescribed</u>			<u>Percent visual aid Rx</u>
		<u>Distance</u>	<u>Near</u>	<u>Both</u>	
Cornea	49	4	23	6	67.3
Iris	26	2	9	15	61.5
Lens	174	9	78	19	60.9
Glaucoma	66	1	35	3	59.1
Vitreous	6	0	4	0	66.7
Retina-choroid	210	12	114	18	68.6
Macula	170	5	111	11	74.7
Nystagmus congenital	112	17	38	24	70.5
Optic nerve	60	8	25	6	65.0
Refractive error	49	9	14	14	75.5
Other	97	11	39	20	72.2

Table XIX
Retina-Choroid Pathology

	<u>Number of Patients</u>
1. Diabetic retinopathy	35
2. Chorioretinitis, residuals of	34
3. Retrolental fibroplasia	23
4. Chorioretinal degeneration, myopia	20
5. Retinal detachment	20
6. Choroidal sclerosis	20
7. Pigmentary degeneration, primary	15
8. Toxoplasmosis, residuals of	6
9. Coloboma of retina-choroid (congenital)	4
10. Hypertensive retinopathy	4
11. Retinal arteriosclerosis	4
12. Occlusion of central retinal vein	3
13. "Tapeto-retinal" degeneration	3
14. Retinal hemorrhage, cause undetermined	2
15. Colloid degeneration (Doyne's)	2
16. Retinoschisis	2
17. Chorioretinal trauma	1
18. Angioid streaks with degeneration	1
19. Sympathetic uveitis	1

Table XIX (continued)

	<u>Number of Patients</u>
20. Exudative retinopathy (Coat's)	1
21. Retinal aplasia, congenital	1
22. Retinal degenerations - unclassified	7
	<hr/>
Total	210



Table XX

Macula - Pathology

	<u>Number of Patients</u>
1. Senile macular degeneration	68
2. Heredo-macular degeneration	10
3. Choroidal sclerosis - macula	8
4. Diabetic macular degeneration	6
5. Disciform macular degeneration	6
6. Macular degeneration in myopia	5
7. Chorioretinitis, central, residuals of	5
8. Scar of macula, traumatic	4
9. Colloid macular degeneration	3
10. Macular hole	3
11. Macular dysplasia, congenital	3
12. Arteriosclerotic macular degeneration	2
13. Retinitis pigmentosa with macular involvement	1
14. Retrolental fibroplasia, macula	1
15. Macular derangement, unclassified	44
	<hr/>
Total	169

Table XXI

Utilization of Optical Aids for Distance

By Age Groups

<u>Age</u>	<u>Number of Distance Aids</u>	<u>Good</u>	<u>Utilization</u>			<u>No data</u>	<u>% of "Good" utilization</u>
			<u>Fair</u>	<u>Poor</u>			
Less than 21	64	47	7	2		8	73.4
21 - 40	27	14	2	0		11	51.8
41 - 60	15	7	2	1		5	46.6
61 and older	15	8	2	1		4	53.3
No age given	1	0	1	0		0	0
Totals	122*	76	14	4		28	62.3

*The total number of aids for distance is greater than reported in Table X because of inclusion of observations relating to improved distance vision in bifocals which had been prescribed previously for near vision tasks. In Table X, only aids specifically intended for distance were included.



Table XXII

Improvement in Distance Vision with Optical Aids

<u>Visual acuity w/o glasses or c present glasses</u>	<u>5/200 or less</u>	<u>6/200- 10/200</u>	<u>12/200- 20/200</u>	<u>20/160- 20/100</u>	<u>20/80- 20/60</u>	<u>20/50- 20/40</u>	<u>20/30+ 20/40</u>	<u>Totals</u>
5/200 or less	3*	3	2	4	1	1	0	14
6/200 - 10/200		5*	3	13	8	2	0	32
12/200 - 20/200			7*	14	2	1	0	24
20/160 - 20/100				16*	12	10	1	39
20/80 - 20/60					1	8*	1	11
20/50 - 20/40						1*	0	1
20/30+							0*	0
Total							121	

*Indicates "no change" in visual acuity with the distance aid, and represents 33% of the total aids prescribed.

Table XXIII

Improvement in Distance Vision with Telescopic Aids

<u>Visual acuity \bar{s} glasses or \bar{c} present glasses</u>	<u>5/200 or less</u>	<u>6/200- 10/200</u>	<u>12/200- 20/200</u>	<u>20/160- 20/100</u>	<u>20/80- 20/60</u>	<u>20/50- 20/40</u>	<u>20/30+</u>	<u>Totals</u>
5/200 or less	0*	0	0	1	0	0	0	1
6/200 - 10/200	1*	1	7	3	1	0	13	
12/200 - 20/200		1*	3	2	1	0	7	
20/160 - 20/100			1*	1	6	0	8	
20/80 - 20/60				1*	0	1	2	
20/50 - 20/40					0*	0	0	
20/30+					0*	0		
Total							31	

*Indicates "no change" in visual acuity with telescopic distance aids, and represents 13% of the total.

Table XXIV

Utilization of Optical Aids for Near

By Age Groups

<u>Age</u>	<u>Number of Near Aids</u>	<u>Utilization</u>			<u>% of "Good" utilization</u>
		<u>Good</u>	<u>Fair</u>	<u>Poor</u>	
Less than 21	92	67	12	6	72.8
21 - 40	49	25	6	2	51.0
41 - 60	54	33	5	5	61.1
61 and older	143	64	29	13	44.7
Total	338	189	52	26	55.8

Table XXV

Relationship of Distance Acuity to the Reading Acuity Achieved With Optical Aids

<u>Distance Vision</u>	<u>Reads, With Optical Aid</u>			<u>Totals</u>
	<u>6 point type</u>	<u>8 to 12 point type</u>	<u>14 point type or larger</u>	
5/200 or less	1	6	1	8
6/200 to 10/200	21	35	8	64
12/200 to 20/200	23	19	1	43
20/160 to 20/100	44	26	1	71
20/80 to 20/60	33	9	0	42
20/50 to 20/40	27	3	2	32
20/30 or better	5	1	0	6
Totals	154	99	13	266

Table XXVI

Improvement in Reading Vision With Optical Aids

<u>Near vision \leq glasses, or present Rx</u>	<u>Reads, With Optical Aids</u>			<u>Totals</u>
	<u>6 point type</u>	<u>8 to 12 point type</u>	<u>14 point type or larger</u>	
6 point type	33*	1	0	34
8 to 12 point type	57	20*	0	77
14 point or larger	55	69	10*	134
Totals	145	90	10	245

*Indicates "no change" in near vision with the optical aid, and represents 26% of the group.

Visual Aids Clinic

Ophthalmological Report

Name _____ Age _____ Date _____

VISUAL ACUITY

PERIPHERAL VISION

Without correction (7):

Right	Left
Distance	
Near	

Is there a limitation in the field of vision? _____ If so, what is the widest diameter (in degrees) of the remaining visual field?

Right _____ Left _____

With best previous correction (7):

Right	Left
Distance	
Near	

DIAGNOSES (12):

With prescribed optical aid (13):

Right	Left
Distance	
Near	

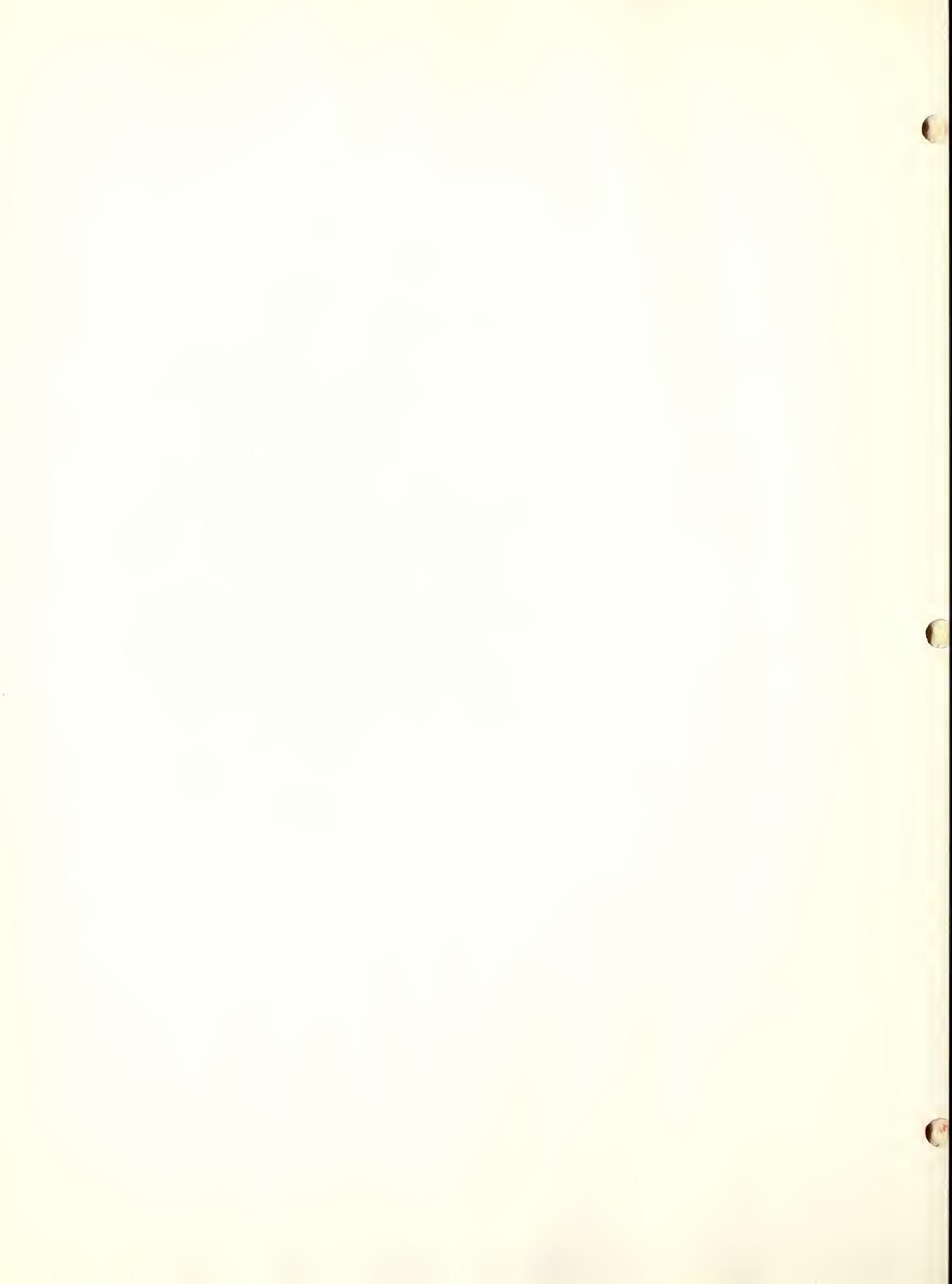
Is condition progressive? _____

Surgery indicated _____

Medication _____

Re-examine (13) _____

Remarks and Recommendations: _____

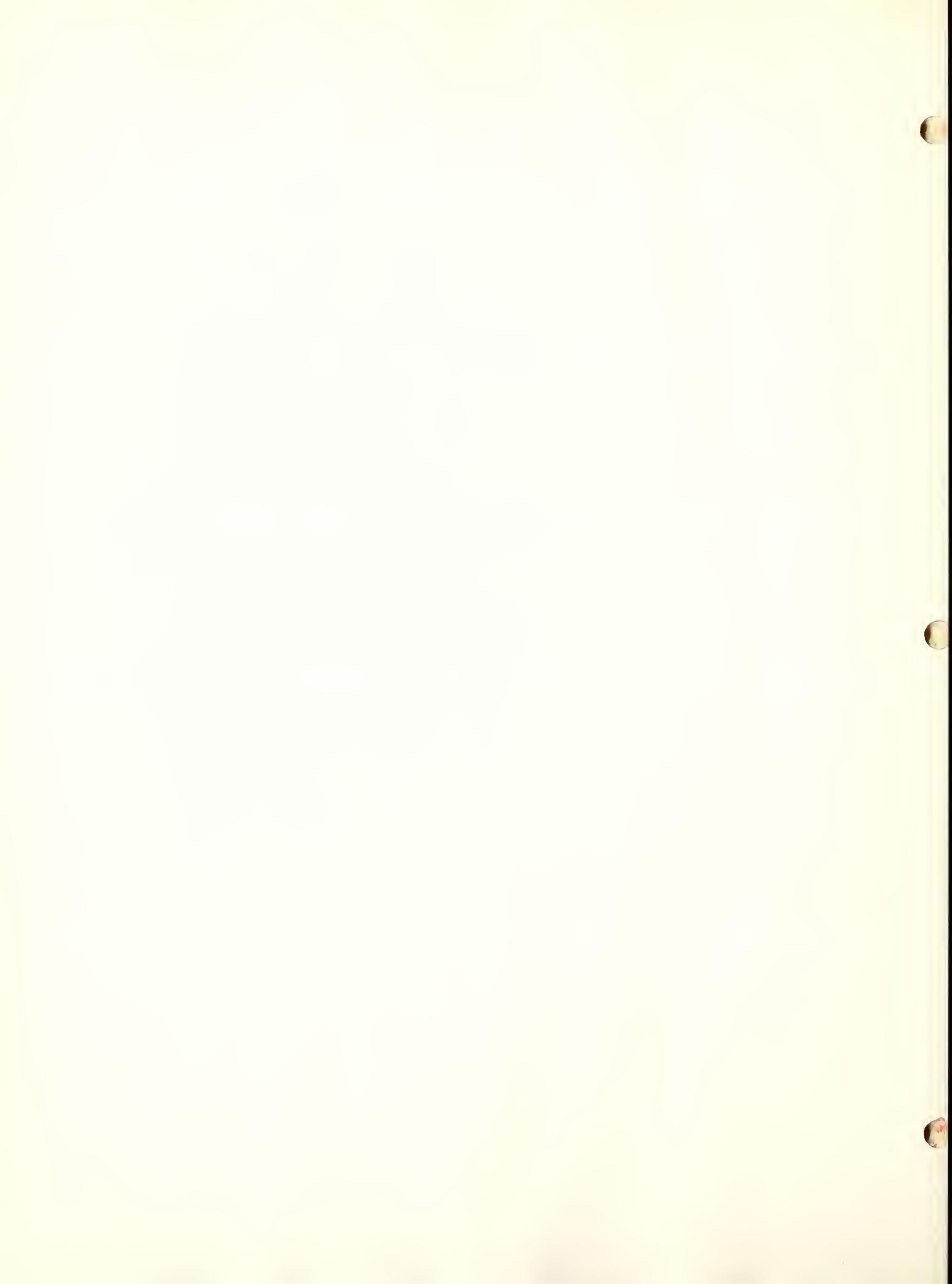


Name _____ Age _____ Grade _____

Information concerning the child named above:

1. The kinds of things the child seems to be able to see to do, i.e., can he get around by himself, take care of himself; what leisure time activities can be participate in?
2. Educational level in school; whether he knows how to read and if so, what kind of material is he reading?
3. Information regarding family: size, income status, occupation of father and/or mother, inter-relationship in family, etc..
4. Impressions regarding the type of personality patterns the child seems to have, i.e., interests, needs, problems, strengths, weaknesses, etc..
5. Any questions you would like answered by the doctors or special requests you might like to make.

Date of report _____ Signed _____ Title _____



Form IV

General Function of Social Work Portion of Study of Visual Aims

1. To evaluate the individual patient's ability to use optical aids from social and psychological standpoints

In initial interviews with patients, the following areas are covered:

A. Social situation - environment

- (1) Family constellation) Kinds of relationships within these
- (2) Present living situation) are of importance as diagnostic
- (3) Social status) clues
- (4) Economic status
- (5) General health of patient and family and use made of medical care (feelings and attitudes toward doctor, hospital, ability to follow recommendations, etc.)
- (6) Presence or absence of stress in situation that might have bearing on use made of the Visual Aid Clinic service.

B. Brief history - developmental, school, work, past crises and ways of handling, etc.

C. Patient's feelings and attitudes toward vision - as related to:

- (1) How vision was lost
- (2) Duration of loss
- (3) Meaning this has for patient
- (4) Changes, adjustments made by patient
- (5) Current adjustment

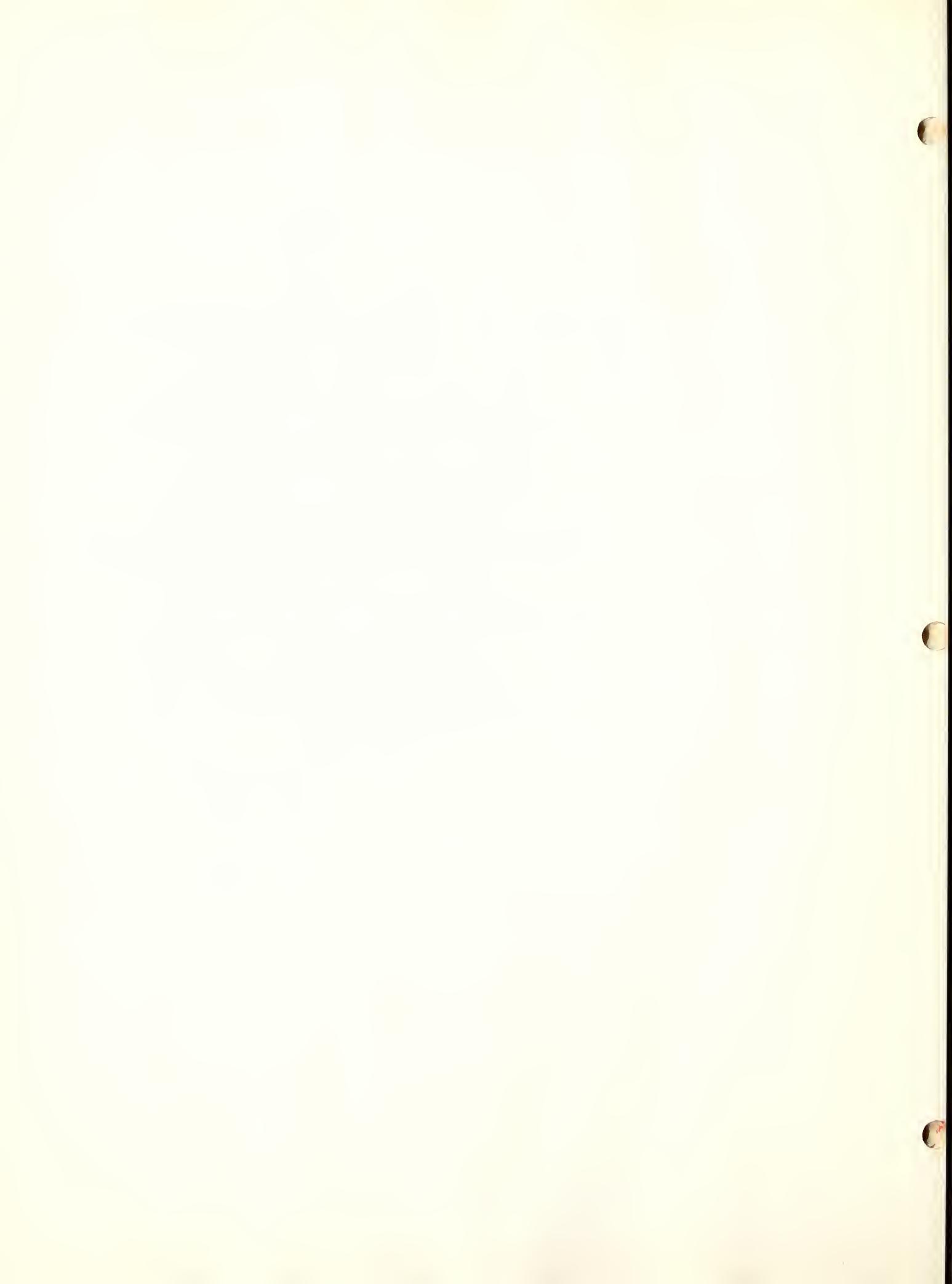
D. Patient's attitudes toward visual aid

- (1) Why patient came for service
- (2) What he hopes to accomplish
- (3) Understanding of what is possible and what he will have to do to make it work
- (4) What adjustments will have to be made (in relation to C-4 above)

E. Summary - assessment of patient and his ability to use services of Visual Aid Clinic

2. To identify the kinds of problems this group of patients has and to develop appropriate ways of dealing with these problems.
3. In follow-up, to determine the outcome or results of services of this clinic for patients and to identify factors which were important.

Material for this section is obtained in interviews with patients at the time of their follow-up visit to clinic, from family members, appropriate community agencies, places of employment, etc.



Form V

Performance With Visual Aid

I. Name _____ Age _____ Grade level _____

II. Most recent I.Q. (date) _____ (Score) _____
and/or Achievement Test level (date) _____ (Score) _____

III. Aid prescribed _____

IV. Size print student is able to see when tested at clinic _____

V. Does child use this size print at any time? Yes _____ No _____

VI. If yes, check purposes:
1. All the time _____ 4. Library _____
2. Classroom work _____ 5. Spare time reading _____
3. Studying _____ 6. Other (specify) _____

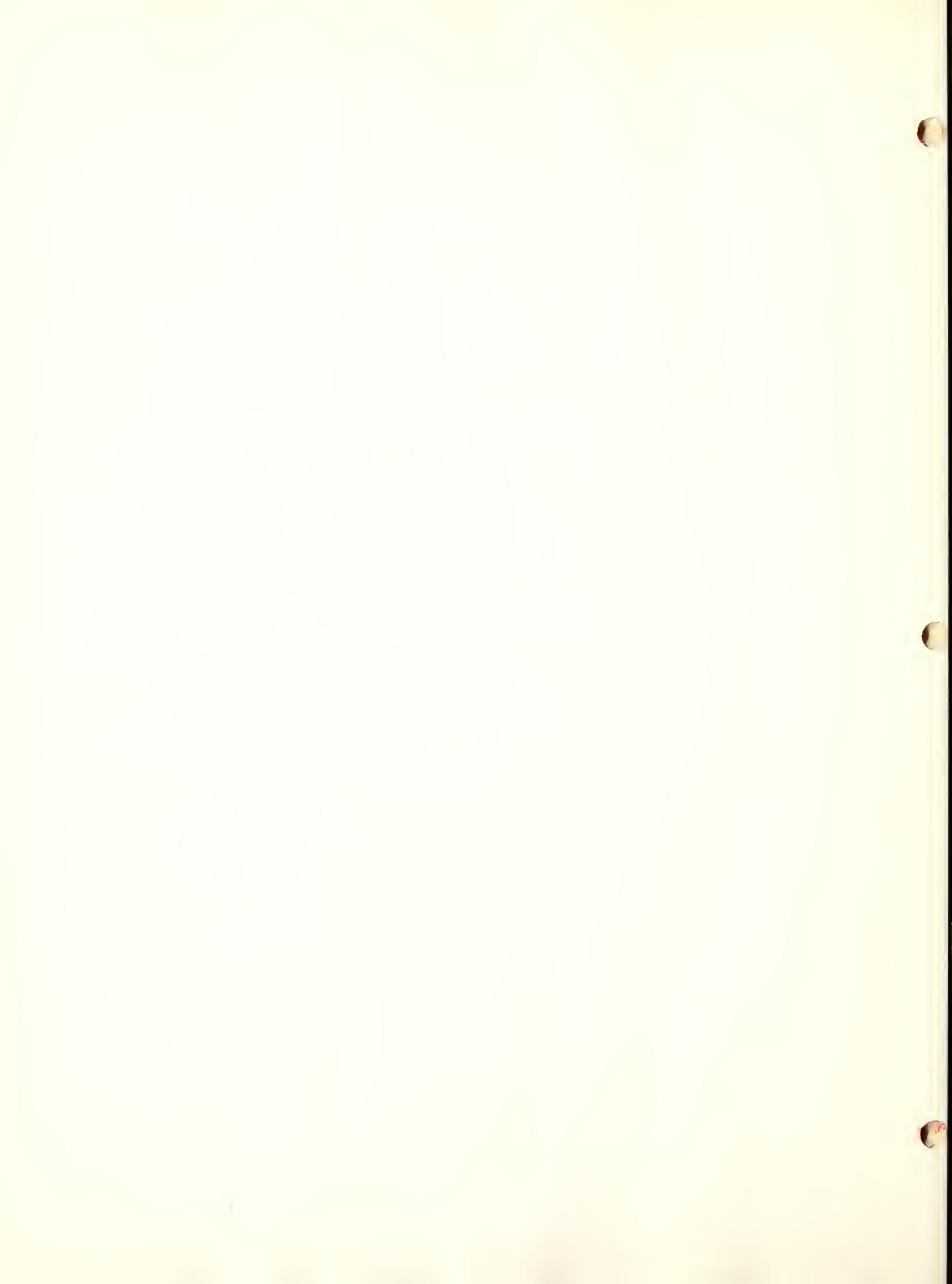
VII. If no, why not? _____

VIII. "Information getting" media used (indicate by using NR for non-reader; B for Braille; SS for sight saving; R for regular size print for student level)
1. Before coming to Visual Aid Clinic: (date: _____ -):
Class work _____ Study _____ Library _____ Spare time _____
2. After coming to Visual Aid Clinic:
Class work _____ Study _____ Library _____ Spare time _____

IX. Have you observed any other changes other than improved vision that might be due to student's having attended Visual Aid Clinic? Yes _____ No _____
If yes, describe: _____

X. Has student changed schools? Yes _____ No _____
If so, was this because of:
1. Improved visual acuity _____
2. More accurately measured visual acuity _____
3. Other reasons (state) _____

XI. Remarks: _____



Visual Aid Clinic
Department of Ophthalmology
Washington University School of Medicine

Follow-up Visual Aid Survey - Teachers

was fitted with visual aid* on _____

(Name)

(Date)

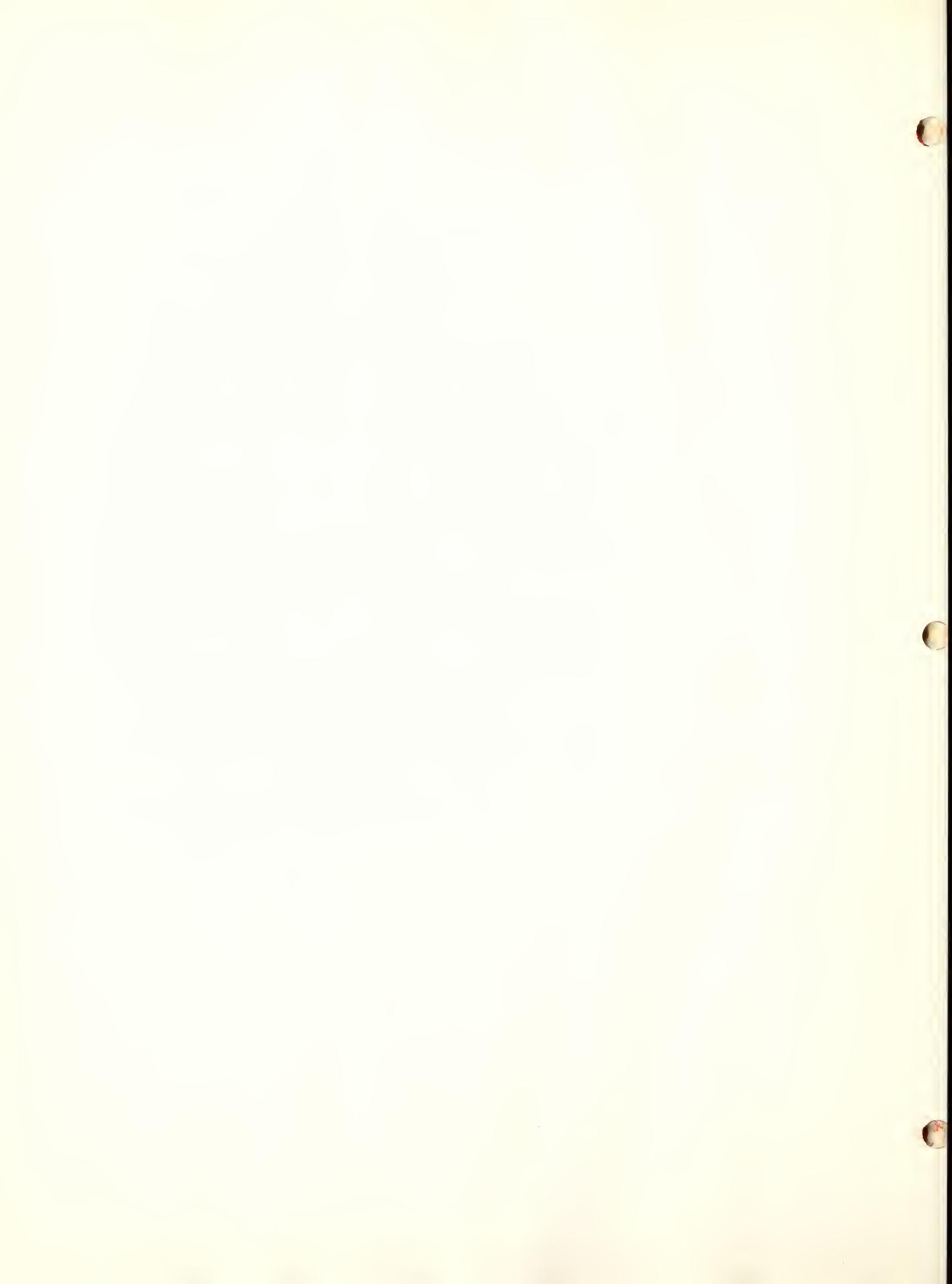
1. Was he a pupil in your school at that time? Yes _____ No _____
 - (a) If no, please give the name and address of school he was attending at that time:

 - (b) If yes, in what grade was he enrolled?

2. In what grade is child enrolled for school year 1960-1961?

3. Is this child currently using his visual aid at school?
 - (a) For study:
____ All of the time
____ Some of the time
____ None of the time
 - (b) In classes:
____ All of the time
____ Some of the time
____ None of the time
 - (c) At play:
____ All of the time
____ Some of the time
____ None of the time
4. In your opinion, when used, does the visual aid seem to benefit the child?
Yes _____ No _____
To what degree:
____ Considerable
____ Some
____ Little
5. If this child does not use the visual aid, what factors, in your opinion, have contributed to non-use:
____ His way of functioning required too many changes in the way the child was used to doing things
____ The visual aid was too difficult for child to use
____ Parental attitudes, i.e., disinterest, over-emphasis on use, etc.
____ The visual aid did not seem to help
____ Other factors:

* Visual aid means eye glasses, hand magnifying glasses, desk reading lamps, etc.



6. Have you noted improvement in other areas of functioning which have occurred since the child secured the aid:

(a) Relationship with peers: Yes No

If yes, indicate degree: Considerable
 Some
 Little

(b) Relationship with teachers: Yes No

If yes, indicate degree: Considerable
 Some
 Little

(c) Other: _____

7. Have psychological or achievement tests been given to this child by the school? Yes No

If yes, give the following information:

Name of test(s): _____

Date(s): _____

Results: (scores obtained and summary) _____

8. Have you noted any improvement in child's school performance since he was fitted with the visual aid? Yes No

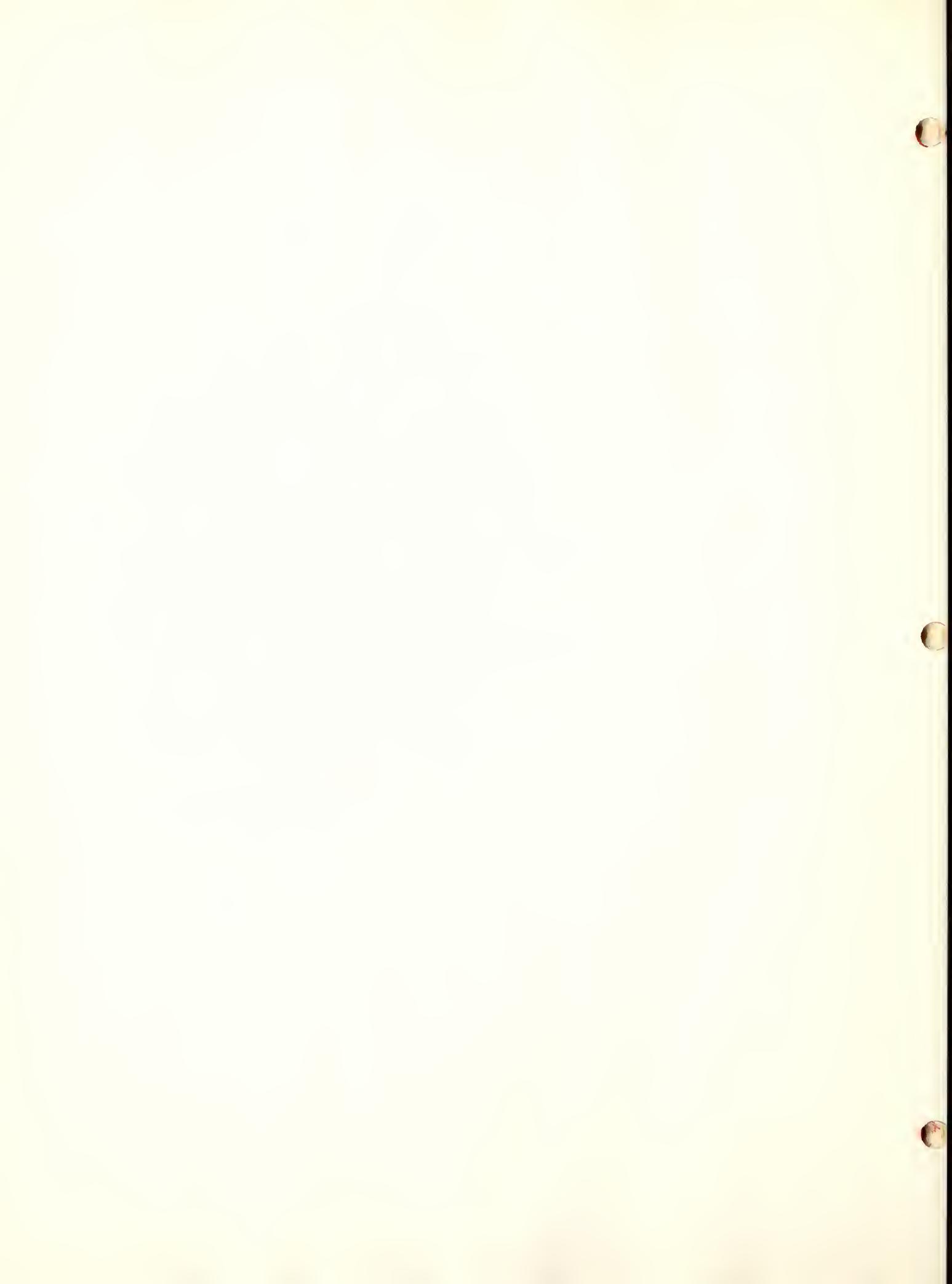
His level of academic performance:

Prior to having visual aid:

Superior
Above average
Average
Below average
Failing

Currently:

Superior
Above average
Average
Below average
Failing



9. Have you noted any improvement in child's general adjustment to the school situation since receiving the visual aid? Yes No

His rating on behavioral report (may be called citizenship, social adjustment, work habits, etc.)

Prior to having visual aid:

- Superior
- Above average
- Average
- Below average
- Failing

Currently:

- Superior
- Above average
- Average
- Below average
- Failing

10. Have you noted any change in child's participation in activities, other than class work, since he was fitted with visual aid?

- Less participation
- No change
- More participation

If less, in which areas has this occurred?

- Unorganized play activities
- Organized play activities
- Extracurricular activities, sponsored by school or church
- Other (indicate): _____

If more, in which areas has this occurred?

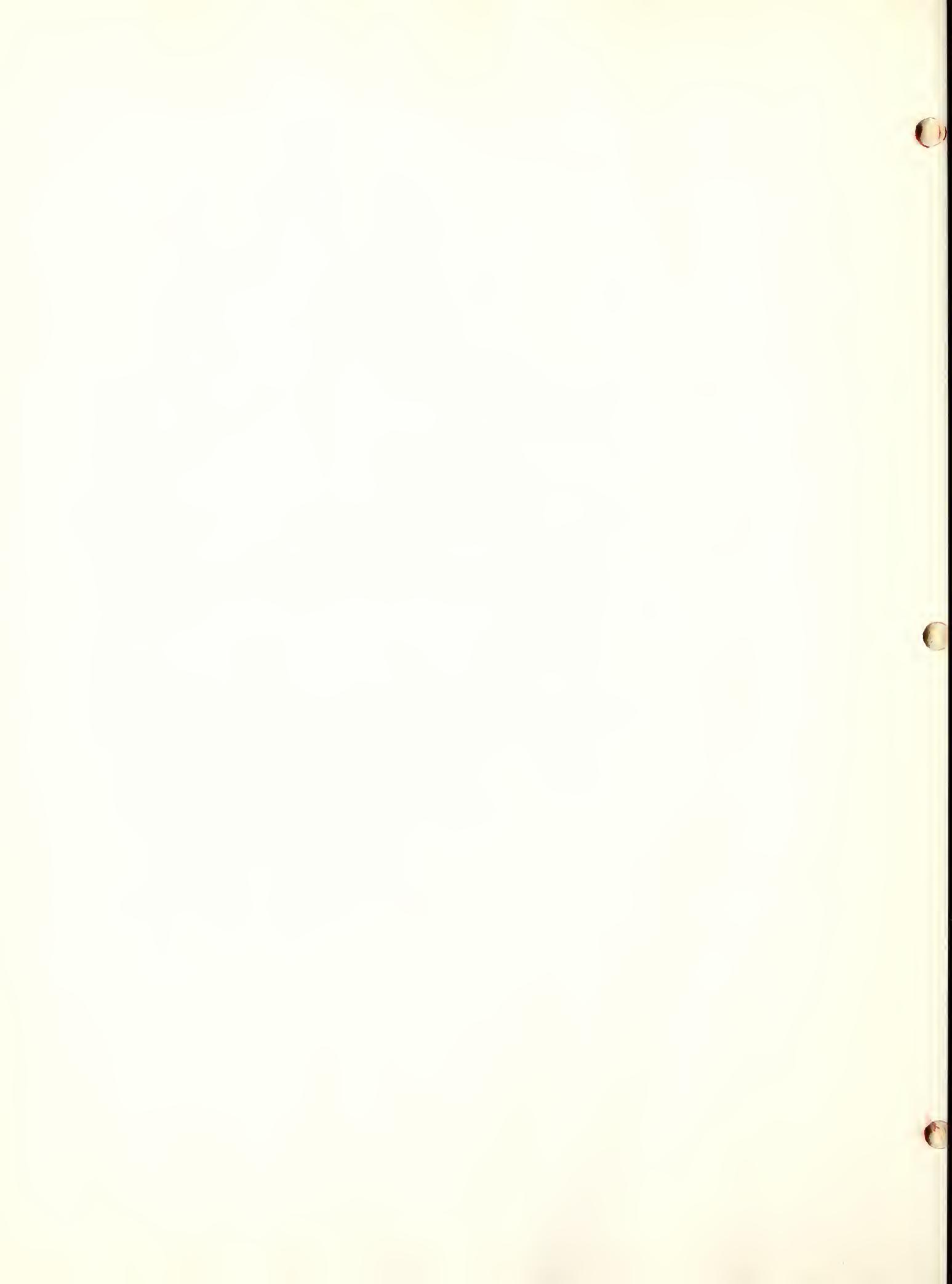
- Unorganized play activities
- Organized play activities
- Extracurricular activities, sponsored by school or church
- Other (indicate): _____

11. Are any changes evident in this child's way of functioning outside of the school situation which you feel are related to having the visual aid?

Yes No Do not know

If yes, describe the area and kind of change: _____

12. General comments: _____



Visual Aid Clinic
Department of Ophthalmology
Washington University School of Medicine

Follow-up Visual Aid Survey - Parents

Your child _____ was fitted last with visual aid* on _____
(Date)

1. Does your child use this visual aid at home? Yes _____ No _____

If no, was this because your child found it:

- Was too hard to manage
- Was upsetting
- Required too many changes in the way your child was used to doing things
- Did not seem to help
- Subjected him to unpleasant reactions from his friends and others

2. Does your child use this visual aid at school? Yes _____ No _____

If no, was this because your child found it:

- Was too hard to manage
- Was upsetting
- Required too many changes in the way your child was used to doing things
- Did not seem to help
- Subjected him to unpleasant reactions from his friends and others

3. In your opinion, has your child's vision been benefitted by the visual aid?
Yes _____ No _____

If yes, check degree of benefit:

- Considerable
- Some
- Little

4. Do you believe that being fitted with the visual aid has contributed to benefits for your child in any of the following ways:

(a) Relationships with other children: Yes _____ No _____

If yes, indicate degree:

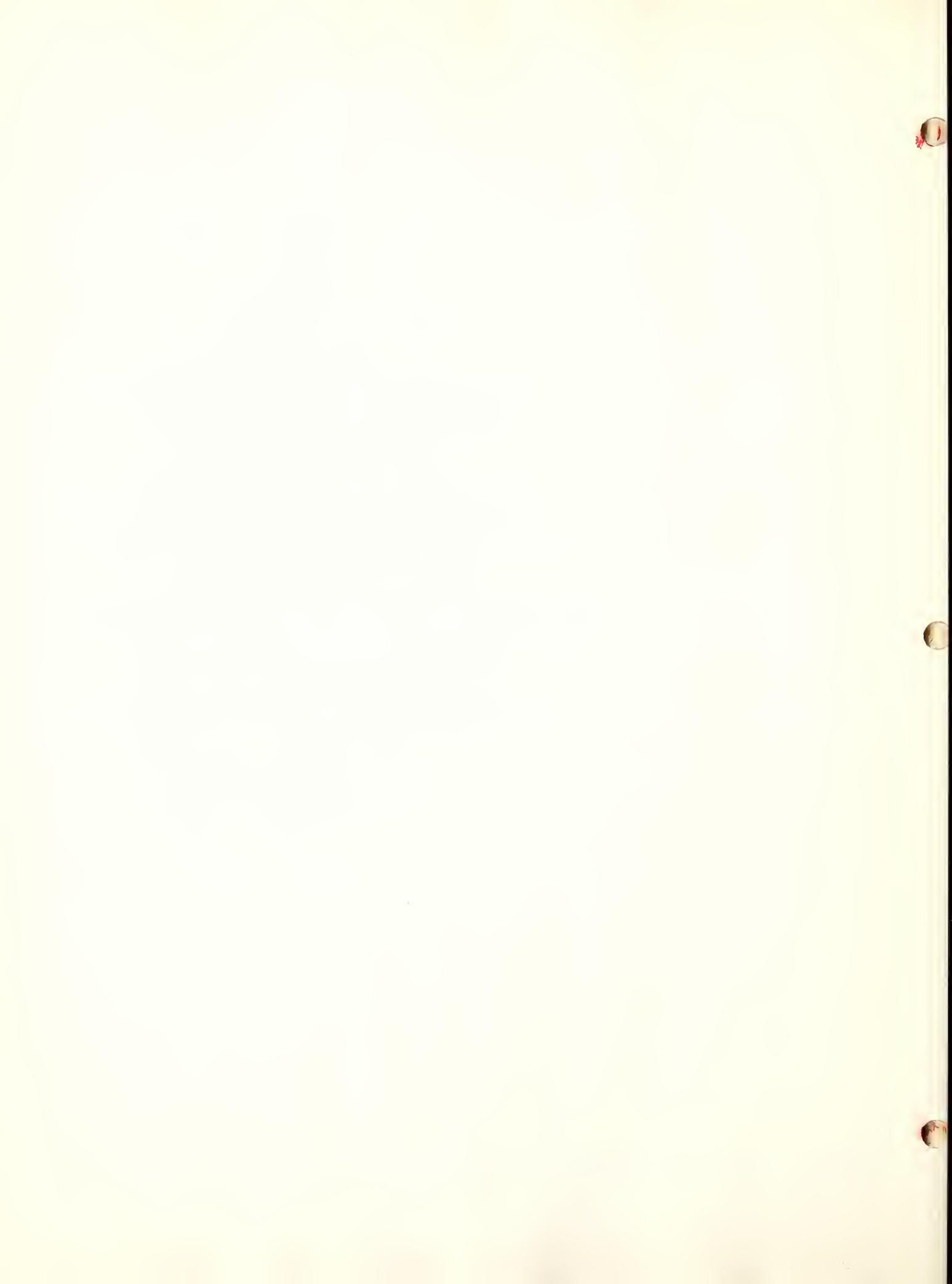
- Considerable
- Some
- Little

(b) Relationships with adults: Yes _____ No _____

If yes, indicate degree:

- Considerable
- Some
- Little

* Visual aid means eye glasses, hand magnifying glasses, desk reading lamps, etc.



(c) Improvement in school grades: Yes No

If yes, indicate degree:

====	Considerable
====	Some
====	Little

(d) Improvement in relationships with teachers and other students:

Yes No

If yes, indicate degree:

====	Considerable
====	Some
====	Little

(e) Improvement in physical activities and/or play: Yes No

If yes, indicate degree:

====	Considerable
====	Some
====	Little

(f) Have you observed any ways other than those listed above in which your child has been benefitted: Yes No

If yes, describe: _____

5. At the time your child was fitted with the visual aid, he was in the _____ grade and was attending:

Name of school: _____

Address: _____ City: _____ State: _____

Name of school principal: _____

Name of school teacher: _____

6. My child is now in the _____ grade and is attending:

Name of school: _____

Address: _____ City: _____ State: _____

Name of school principal: _____

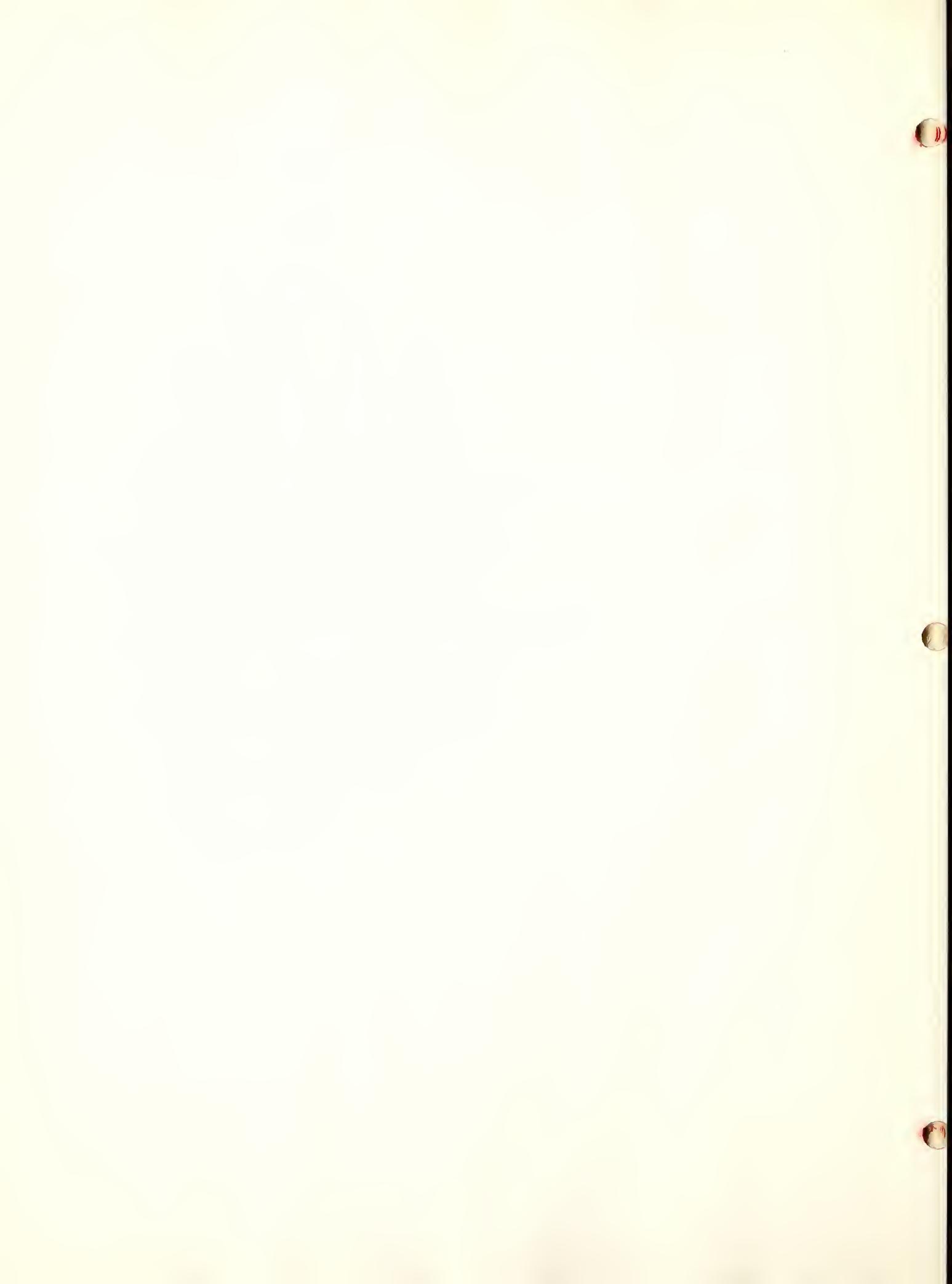
Name of school teacher: _____

I hereby give my consent for you to write or to talk with my child's teachers to secure additional information.

_____ (Your name)

_____ (Your relationship)

_____ (Date)



Form VIII - 1

NAME: S. N. V. #
ADDRESS: DATE:
CITY-STATE: AGE:
PHONE: SEX:
REFERRED BY: COLOR:

1. DIAGNOSIS: (from referral source)
2. FOR WHAT PURPOSES DO YOU WANT SPECIAL LENSES?
3. HISTORY:

Onset of poor vision, treatment:
Date of last eye exam:
Status of eye condition:
 Static?
 Chronic?
 Peripheral
Education: Regular
 Special (Sight-Saving? Braille?)

Occupational History:

General Health. (Other physical defects?)

Mental Status:

Activity Status?

4. VISUAL HISTORY:

Distance Vision:

Does Pt. ge. abou. unaided? Day? Night In Traffic?

Does pt. watch TV? At ____ feet?

Does bright light (Help, hinder) distance vision?

What D. V. lenses or aids are used?

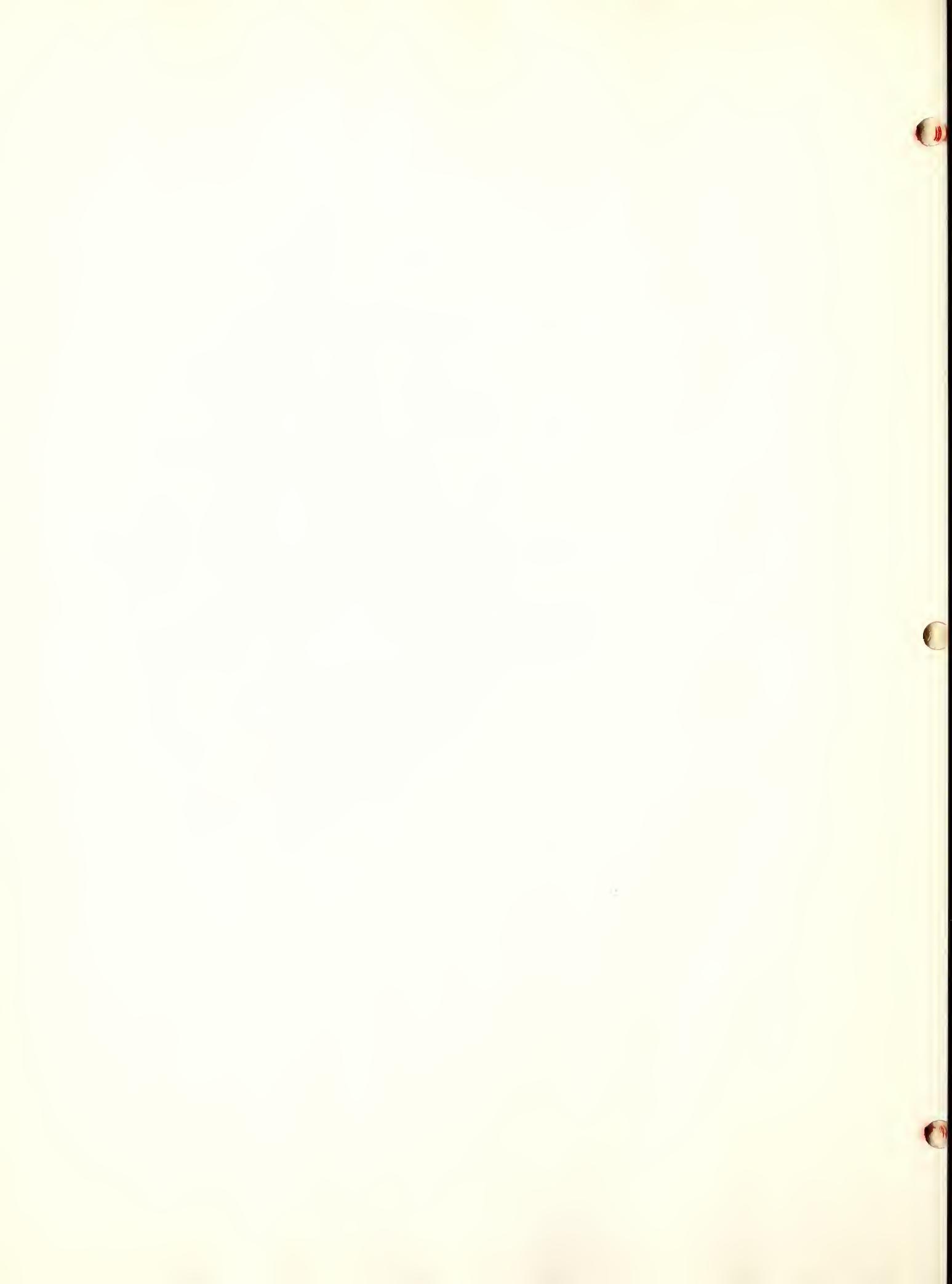
Near Vision:

Does pt. read (or sew, etc.)? At what distance?

What aids used:

What type reading matter?

Does bright light help, hinder near vision?



Form VIII - 2

NAME:

- 2 -

DATE:

6. LENSES WORN AT PRESENT (years old)

R.

; add

L.

; add

7. VISION:

	Without Glasses	With Glasses
Distance Vision: RE.		
	LE.	
Near Vision:	RE.	Point at
	LE.	Point at
Fixation:	Eccentric?	
Nystagmus:		

8. KERATOMETER:

R.

L.

9. EXAMINATION:

External:

Ophthalmoscopic:

Slit Lamp:

Schiotz: R. L.

Fields:



Form VIII - 3

10. REFRACTION: (Manifest? Cycloplegia? Drug Used?)

Distance: R.

L.

Near: R.

L.

11. SPECIAL AIDS REFRACTION:

1. Distance: R.

L.

2. Reading: Add + R. Point at "

L. Point at

3. Microscopic/Aspheric (Type:)

R. Point at

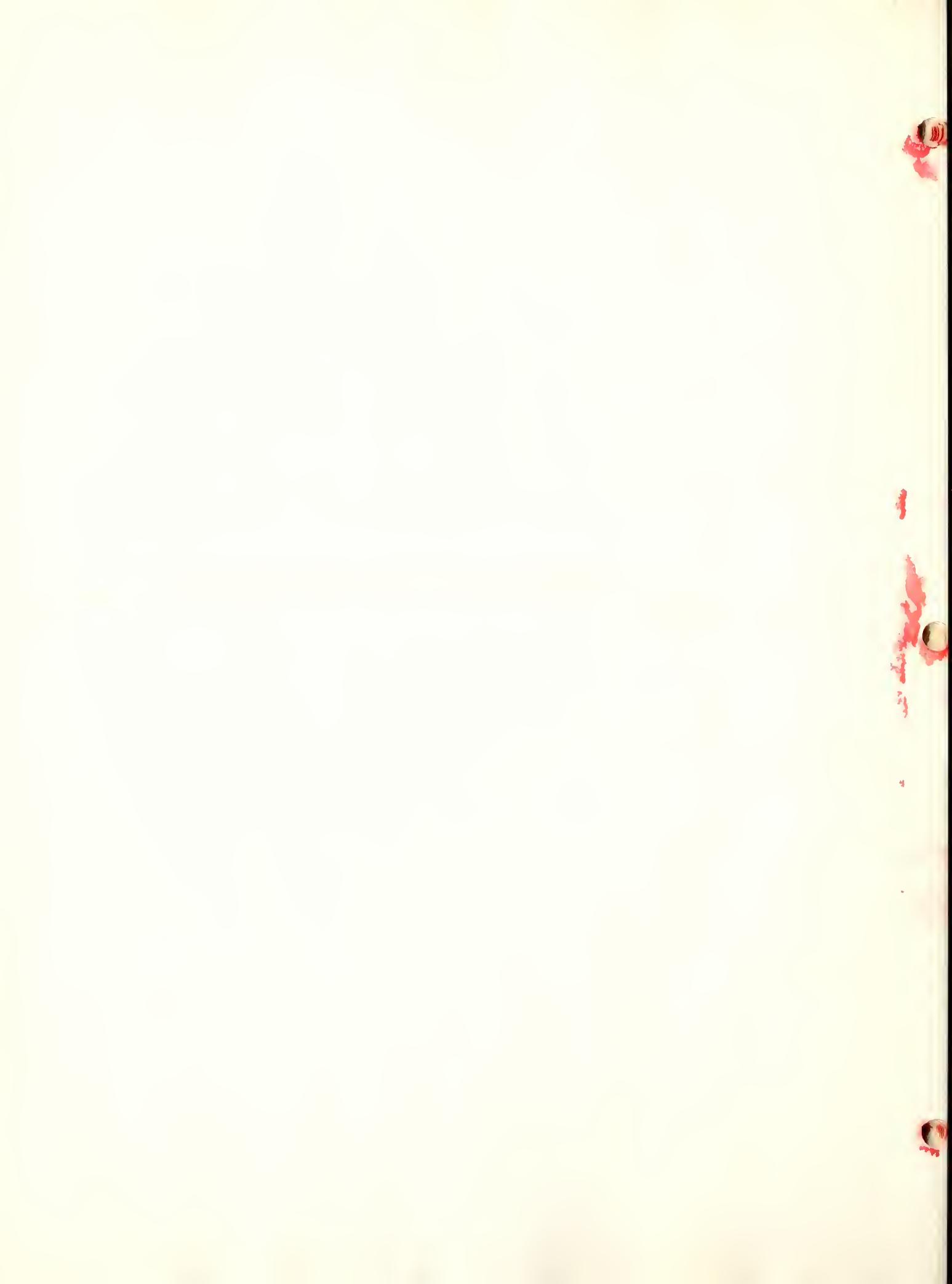
L. Point at

4. Hand Magnifier (Or other)

12. DIAGNOSIS:

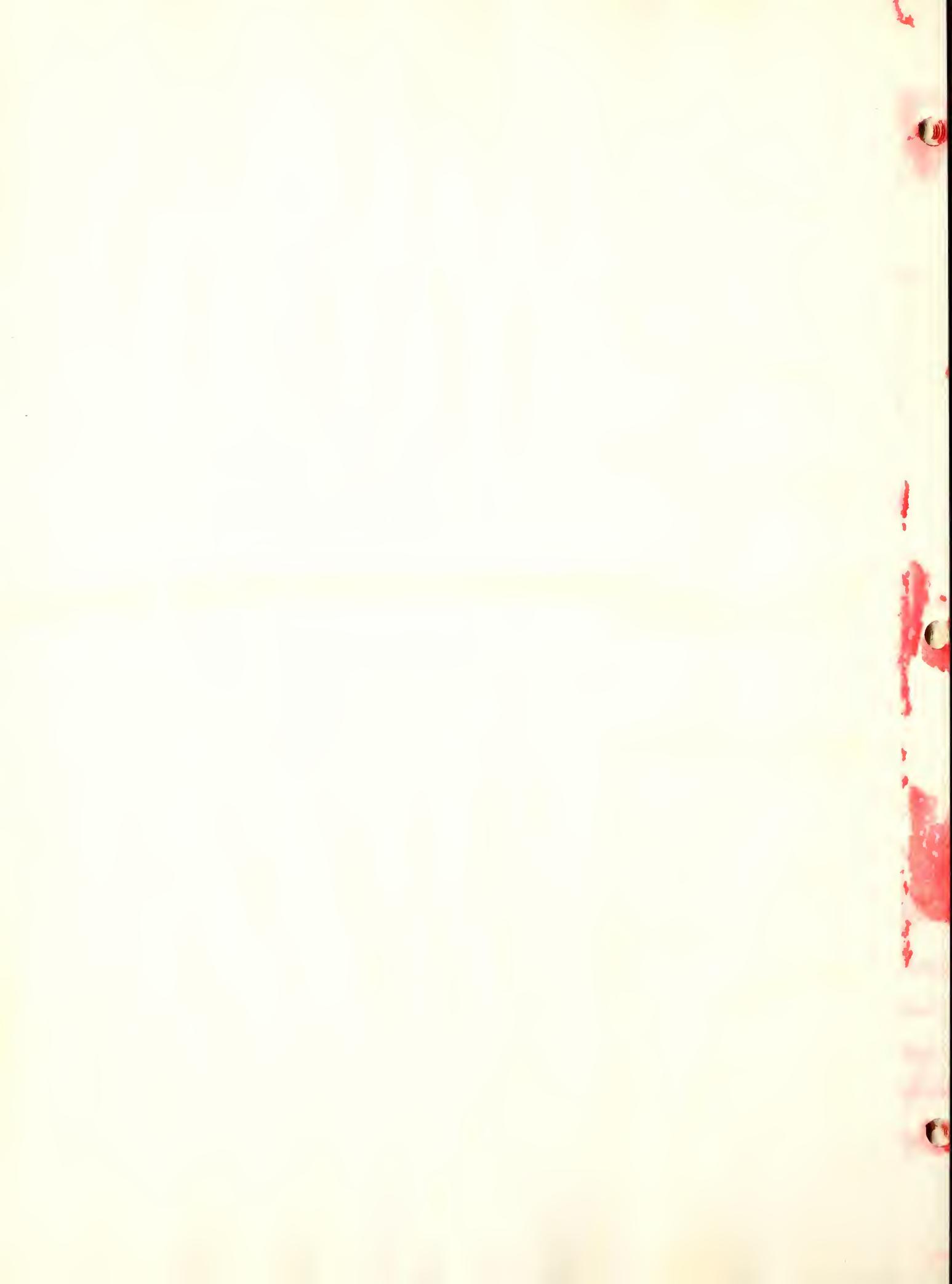
13. DISPOSITION (RX and Vision with this device)
(Date)

14. PROGRESS NOTES: (See reverse side)



Form IX

N U M E R I C A L I N D E X										C L A S S I F I C A T I O N I N D E X																	
31	32	33	34	7	4	2	1	7	4	2	1	19	18	17	7	4	2	1	7	4	2	1					
D I R E C T I N D E X					N U M E R I C A L I N D E X					C L A S S I F I C A T I O N I N D E X					T E X T Y E A R												
35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
NAME _____										DATE OF 1ST VISIT _____																	
LAST _____					FIRST _____					NO. OF VISITS _____					SEX _____												
AGE _____					SEX _____					NO. OF VISITS _____					P.O.B. _____												
REF.: <input type="checkbox"/> P.P. <input type="checkbox"/> CLINIC <input type="checkbox"/> V.R. <input type="checkbox"/> YES <input type="checkbox"/> NO					P.O.B. _____					M.S.B. _____					OTHER _____												
ADDRESS: GREATER ST. LOUIS										DIAGNOSIS (RELATED TO VISUAL IMPAIRMENT):																	
1. _____										2. _____																	
3. _____										4. _____																	
OPTICAL AID: DISTANCE _____										READING VISION																	
NEAR _____										DISTANCE VISION																	
RX GIVEN: R. E. _____										WITH GL. _____																	
L. E. _____										WITHOUT GL. _____																	
MCGEE KEYSORT U. S. PAT. NO. 2,413,607										WITH REFR. _____																	
D I R E C T I N D E X										O I E C B O I E C B O I E C B O I E C B																	
UTILIZATION OF AID: <input type="checkbox"/> G <input type="checkbox"/> F <input type="checkbox"/> P										FIRST LETTER SECOND LETTER THIRD LETTER																	
L. E. _____										O I E C B O I E C B O I E C B O I E C B																	
MCGEE KEYSORT U. S. PAT. NO. 2,413,607										O I E C B O I E C B O I E C B O I E C B																	
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28										1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28																	
30										31																	
29										30																	



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